File
CO SPS-2

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Long-Term Pavement Performance

September 14, 1998

Mr. Ahmad Ardani
Colorado Dept. of Highways
4201 E. Arkansas Ave.
Denver, CO 80222

RE: Draft SPS-2 Construction Report - SHRP 080200

Dear Mr. Ardani:

Please find enclosed the draft version of the SPS-2 Construction Report - SHRP 080200. Please review the report and return any comments to us.

If you have any questions, please do not hesitate to call.

Sincerely,
NICHOLS CONSULTING ENGINEERS, Chtd.

Douglas J. Frith, P.E.
Co-Principal Investigator

DJF/rkp
Enclosure

cc: Gonzalo Rada
Shiraz Tayabji
Doug Brown
Monte Symons, w/o encl.
John Nichols, w/o encl.

FEDERAL HIGHWAY ADMINISTRATION
Long Term Pavement Performance
Specific Pavement Studies

SPS-2 CONSTRUCTION REPORT
SHRP 080200

Prepared For:
Colorado Department of Transportation
Federal Aid Project No. I 076-1 (138)
I-76 Eastbound, Milepost 18.43
Adams County

Prepared By:
Western Region Contractor
Nichols Consulting Engineers, Chtd.
Reno, Nevada

September 1998

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INTRODUCTION

The following construction report provides documentation of the as-built properties for the Colorado SPS-2 project and provides details of any deviations from the experiment construction guidelines. This report is available as an archival reference for future in-depth analysis of the SPS-2 materials and performance. Areas addressed within are construction sequence, layer thicknesses, material properties (as-placed), out of specification materials placed (even if removed and replaced), surface preparation techniques, problems encountered during construction, weather conditions during construction, and the presence of any construction joints within sections. Also included are the permeable asphalt treated base (PATB) mix design, portland cement concrete (PCC) mix design, lean concrete base (LCB) mix design, and summaries of slump and air content results. The sampling areas and tests conducted for each test section are shown in appendix D. A photographic log illustrating construction procedures, equipment and materials; testing procedures and equipment; and problems encountered during construction is located in appendix A. The material properties are found in appendix B and the material thickness measurements (raw data) in appendix C.

BACKGROUND

The SPS-2 experiment was developed to investigate the effect of selected structural factors on the long-term performance of rigid pavements constructed on different soil types in different climatic environments. The structural factors include concrete slab thickness, concrete strength, base material and drainability (permeability), base course thickness, and lane width. The basic experiment addresses doweled jointed plain concrete pavements. The supplementary experiments, designated SPS-2A and SPS-2B, address undoweled jointed plain concrete pavements with skewed joints and jointed reinforced concrete pavements, respectively. However, the option of constructing these sections was not exercised on this project. In table 1, the eight environmentally-related (soil type and climate) combinations are shown across the top and the 24 pavement structure combinations are shown along the left side. To make construction more feasible to the participating agencies, the 24 test sections required were divided into two separate experimental combinations with 12 sections each. The two experimental combinations were constructed at different locations in the western United States, one in Colorado and one in Northern Nevada. Colorado elected to construct the "U Series" of experimental sections.

Table 1. Basic experiment doweled jointed plain concrete pavements (SPS-2).

Pavement Structure					Climate Zone, Subgrade Site															
Drain	Base Type	PCC		Lane Width	Wet								Dry							
		Thick in.	Strength psi		Freeze				No Freeze				Freeze				No Freeze			
					Fine		Coarse		Fine		Coarse		Fine		Coarse		Fine		Coarse	
					J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
NO	DGAB	8	550	12	J1		L1		N1		P1		R1		T1		V1		X1	
				14		K13		M13		O13		Q13		S13		U13		W13		Y13
			900	12		K14		M14		O14		Q14		S14		U14		W14		Y14
				14	J2		L2		N2		P2		R2		T2		V2		X2	
		11	550	12		K15		M15		O15		Q15		S15		U15		W15		Y15
				14	J3		L3		N3		P3		R3		T3		V3		X3	
			900	12	J4		L4		N4		P4		R4		T4		V4		X4	
				14		K16		M16		O16		Q16		S16		U16		W16		Y16
NO	LCB	8	550	12	J5		L5		N5		P5		R5		T5		V5		X5	
				14		K17		M17		O17		Q17		S17		U17		W17		Y17
			900	12		K18		M18		O18		Q18		S18		U18		W18		Y18
				14	J6		L6		N6		P6		R6		T6		V6		X6	
		11	550	12		K19		M19		O19		Q19		S19		U19		W19		Y19
				14	J7		L7		N7		P7		R7		T7		V7		X7	
			900	12	J8		L8		N8		P8		R8		T8		V8		X8	
				14		K20		M20		O20		Q20		S20		U20		W20		Y20
YES	PATB / DGAB	8	550	12	J9		L9		N9		P9		R9		T9		V9		X9	
				14		K21		M21		O21		Q21		S21		U21		W21		Y21
			900	12		K22		M22		O22		Q22		S22		U22		W22		Y22
				14	J10		L10		N10		P10		R10		T10		V10		X10	
		11	550	12		K23		M23		O23		Q23		S23		U23		W23		Y23
				14	J11		L11		N11		P11		R11		T11		V11		X11	
			900	12	J12		L12		N12		P12		R12		T12		V12		X12	
				14		K24		M24		O24		Q24		S24		U24		W24		Y24

DGAB = Dense-graded untreated aggregate base
LCB = Lean concrete base
PATB = Permeable asphalt-treated base (4-in thickness placed on a DGAB layer)
All perpendicular doweled joints, 15-ft spacing

PROJECT DESCRIPTION

The Colorado SPS-2 site was constructed for the Strategic Highway Research Program (SHRP) as Federal Aid Project No. I 076-1 (138) on I-76 eastbound (M.P. 18.43) in Adams County, near Denver, Colorado (figure 1). The Colorado project is comprised of 13 sections, consisting of 12 primary sections and one state control section (figure 2). This site is located in a dry-freeze zone. The project is located near Barr Lake and wetlands are in close proximity. Also located on the site was a colony of prairie dogs on approximately one acre of the new alignment portion. The prairie dogs were eliminated using gas pellets. The project consists of both a new alignment and removal and reconstruction of a divided 4-lane highway (two lanes in each direction). The annual average daily traffic (two directions) is 8,400 (1988), with 16 percent heavy trucks and combinations. The estimated 18 kip ESAL rate in the study lane is 779,700 per year. The total design 18 kip ESAL applications in the design lane is 15,594,000, with a design period of 20 years. The Colorado SPS-2 was constructed with the primary sections having the criteria shown below in table 2.

Table 2. SPS-2 experiment criteria.

Base Types:	Dense-graded aggregate base (DGAB) Lean concrete base (LCB) Permeable asphalt-treated base (PATB)
Concrete Strengths:	550 psi flexural 900 psi flexural
Pavement Thickness:	8 in 11 in
Lane Widths:	12 ft 14 ft
Drainage Systems:	Non-drainable (figure 3) Drainable (figure 4)

The construction sequencing and layout of the test sections is shown in figure 2 and described in table 3. In addition to the 12 primary SHRP sections, a state supplemental control section, 080259, was also constructed from station 221+10 to 227+90. This section was built using Colorado's standard design criteria: 11 in of PCCP on subgrade, 650 psi flexural strength, and a 12 ft lane width.

Key personnel involved in the project are shown in table 4.

The construction of the SHRP SPS-2 sections was from approximately July 1, 1993 to November 1, 1993. The project was constructed in two phases. Phase 1, the new alignment portion, consisted of seven sections, 080217, 080220, 080221, 080222, 080223, 080224, and 080259, located from station 155+90 to 227+90 (figure 2). Phase 2, the removal and reconstruction portion, consisted of six sections, 080213, 080214, 080215, 080216, 080218, and 080219, located from station 101+40 to 155+60 (figure 2). Phase 1 was opened to traffic on October 7, 1993. Phase 2 was opened to traffic on January 5, 1994.

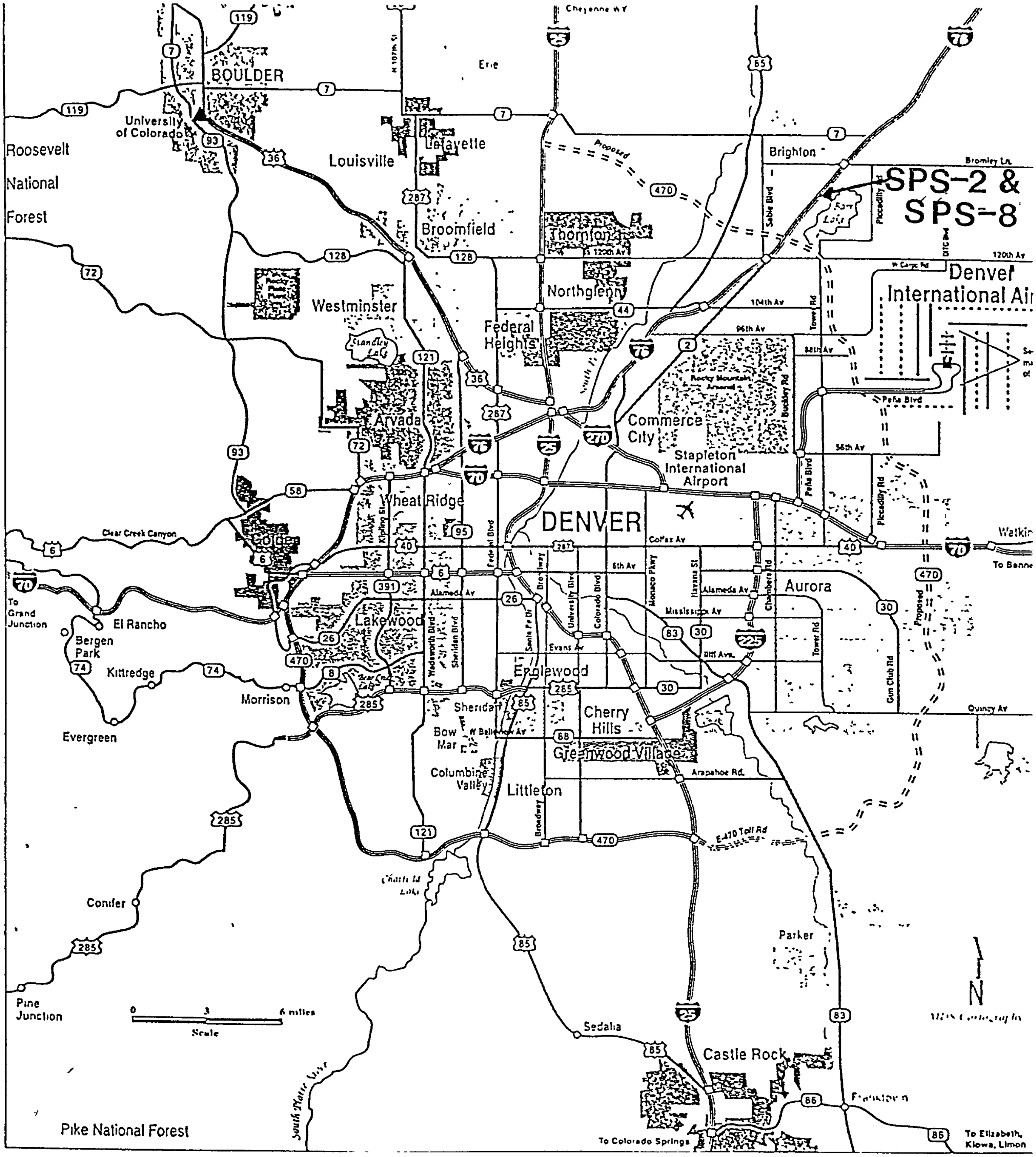


Figure 1. Site location.

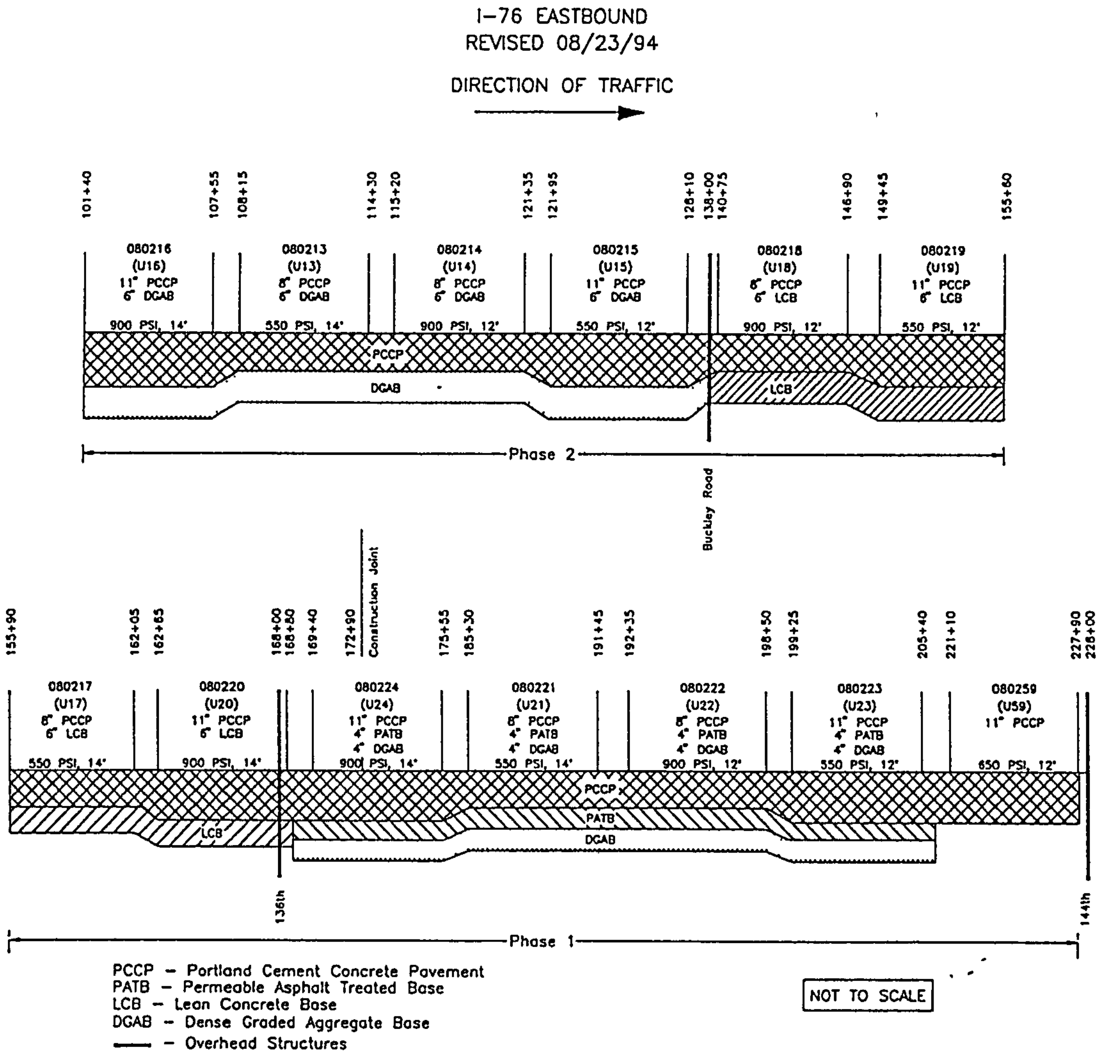


Figure 2. Layout and construction sequence of experimental test sections, Colorado SPS-2 project.

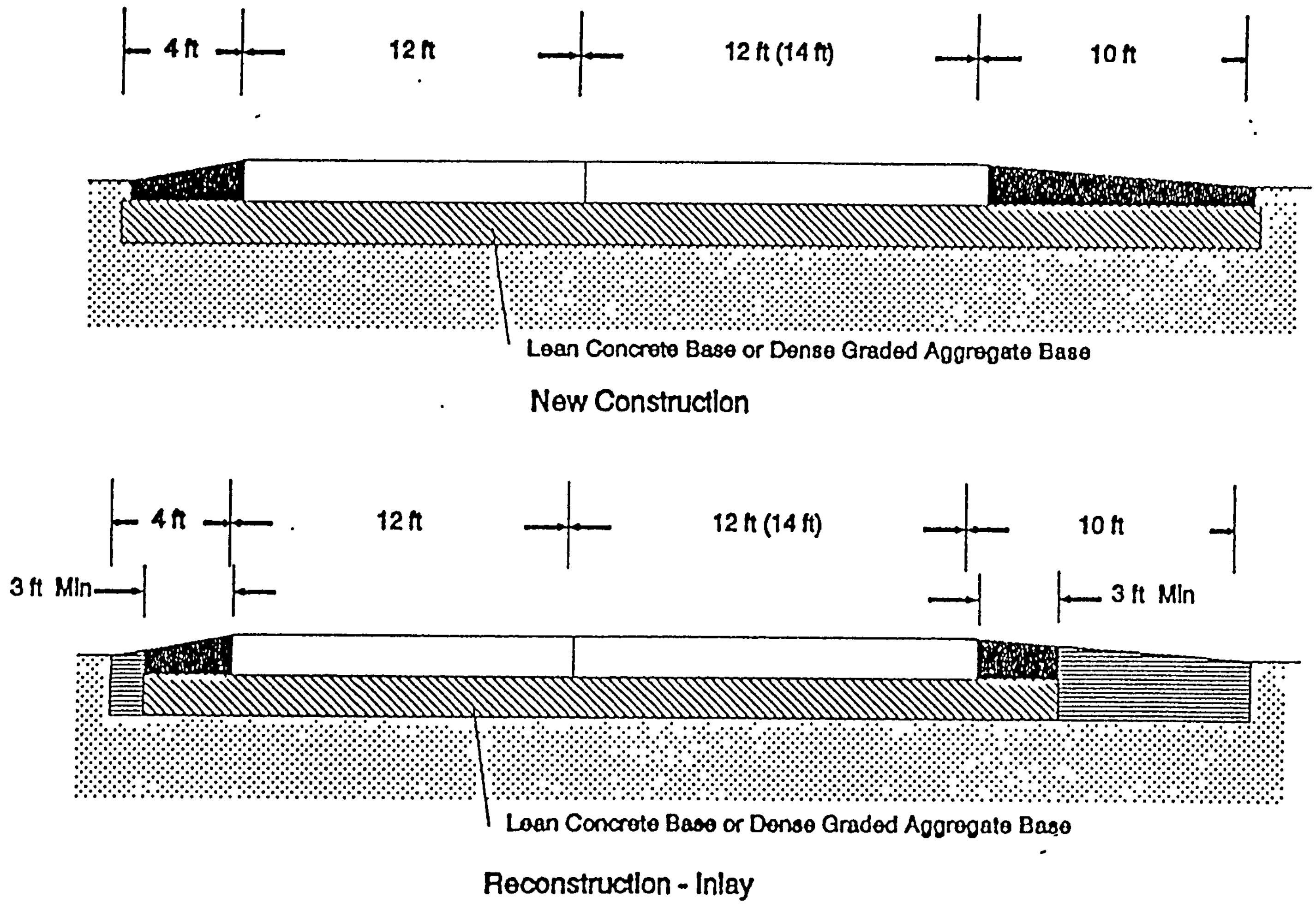


Figure 3. Typical section for test sections with non-drainable base layer.

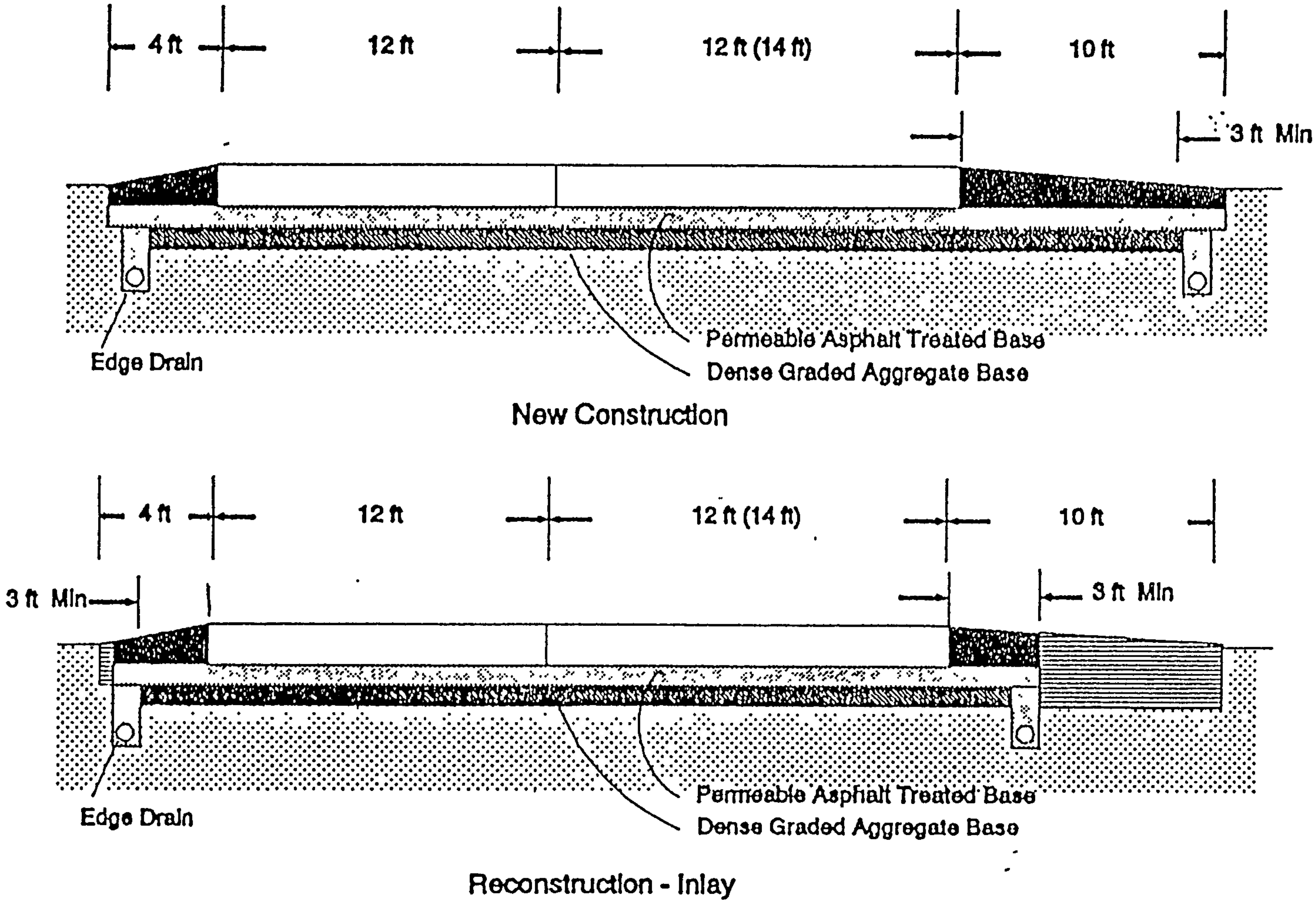


Figure 4. Typical section for test section with drainable base layer.

Table 3. Location of SPS-2 test sections, I-76 Colorado.

Section No.	Start Section	Start Monitor	End Monitor	End Section	Notes
08216	101+40	101+90	106+90	107+55	DG\11"\900#\14'
Trans	107+55			108+15	
080213	108+15	108+65	113+65	114+30	DG\8"\550#\14'
Trans	114+30			115+20	
080214	115+20	115+20	120+20	121+35	DG\8"\900#\12'
Trans	121+35			121+95	
080215	121+95	122+65	127+65	128+10	DG\11"\550#\12'
Trans	128+10			134+00	Large box culverts @ 133
080218	140+75	141+40	146+40	146+90	LC\8"\900#\12'
Trans	146+90			155+90	
080219	149+45	149+95	154+95	155+60	LC\11"\550#\12'
Trans	155+60			155+90	136th Ave. taper & exit ramp
080217	155+90	156+55		159+86.3	LC\8"\550#\14'
080217	159+86.3		161+55	162+05	
Trans	162+05			162+65	
080220	162+65	163+30	168+30	168+80	LC\11"\900#\14'
Trans	168+80			169+40	
080224	169+40	169+90	174+90	175+55	DG\PB\11"\900#\14'
Trans	175+55			185+30	136th. Ave entrance ramp
080221	185+30	185+95	190+95	190+45.84	DG\PB\8"\550#\14'
080221	190+45.84			191+45	
Trans	191+45			192+35	
080222	192+35	192+85	197+85	198+50	DG\PB\8"\900#\12'
Trans	198+50			199+25	
080223	199+25	199+90	204+90	205+40	DG\PB\11"\550#\12'

Key to Notes:

DG	- Dense Graded Aggregate Base Section
LC	- Lean Concrete Base Section
PB	- Permeable Asphalt Concrete Base Section
8" or 11"	- PCC surface thickness, inches
550# or 900#	- design flexural strength for PCC mix, psi
14' or 12'	- outside lane width, feet

Table 4. Key project personnel.

Colorado Department of Transportation (CDOT) Ahmad Ardani, LTPP Coordinator Al Eastwood, Resident Engineer Brett Locke, Project Engineer Tom McNeill, Asst. Project Engineer
Castle Rock Construction Ralph Bell, Contractor Jim Lauer, Superintendent
CTL/Thompson, Inc. - Geotechnical Engineers Art Greengard, Jr., Project Engineer, Materials Sampling & Testing Fred Braun, Field Sampling & Testing
Nichols Consulting Engineers, Chtd. Norma Henderson, LTPP Observer

PRE-CONSTRUCTION

CONCRETE TRIAL BATCHING

Appendix B contains all information regarding the trial mix studies conducted on the following PCCP designs:

- CDOT Class P mix
- SHRP 550 psi flexural mix
- SHRP 900 psi flexural mix
- SHRP Lean Concrete Base (500 psi to 750 psi at 7-day strength)

As there was not an LTPP representative present when these mix designs were developed, the only information available is found in the reports from CTL/Thompson, Inc. to the contractor, Castle Rock Construction (appendix B).

CONSTRUCTION

SUBGRADE

Overview

The soil at the site varies from clayey sand to sandy clay, but is predominately sand to clayey sand. The vertical grade is an average of +1.4 percent, in the direction of traffic, with no horizontal curvature. For the experiment, the subgrade is classified as a coarse grained soil.

The equipment used for sections constructed in Phase 1, station 155+90 to 227+90 (sections 080217, 080220, 080221, 080222, 080223, 080224, 080259) were two to five scrapers (CAT 631E) and a dozer (CAT D9). The subgrade was prepared by cutting and filling at the same time on those sections requiring such. The soil was compacted with the weight of the equipment. Compaction was monitored by personnel from CTL/Thompson using a nuclear density gauge. No moisture was added as the water table was approximately 4.5 ft from the surface and the soil exhibited an acceptable level of moisture. A blade (CAT 140G) was used to prepare the subgrade for trimming. The subgrade was trimmed with a GOMACO 9500 using a stringline for grade control. Elevation measurements were taken on every section. Subgrade preparation for Phase 1, station 155+90 to 227+90, began approximately July 1, 1993, and was completed August 19, 1993. Subgrade preparation for Phase 2, station 101+40 to 155+60 (sections 080213, 080214, 080215, 080216, 080218, 080219), commenced the first week of October 1993 and was completed October 14, 1993. The procedures and equipment used were the same as previously listed for Phase 1.

The thickness of the subgrade varied, with six sections on fill (sections 080213, 080214, 080215, 080216, 080221, 080222) and six sections in cut (080217, 080218, 080219, 080220, 080223, 080224). The weather conditions during the subgrade preparation are unknown as the majority of this work was done without the presence of an observer.

Phase 1 - New Alignment

Section 080223

After placing and trimming the DGAB, it was discovered that the subgrade elevation was too high from station 200+40 to 201+25. All of the DGAB and approximately 2.5 in of subgrade were removed from this portion. The subgrade was then recompacted and new elevation measurements were obtained. At station 202+53, a "prairie dog hole" was filled and compacted with soil (fine sand) from the site.

Section 080222

The subgrade appeared to be poorly compacted with approximately 2 in of loose surface material. This section was not recompacted. A plate bearing test and FWD test were conducted at station 195+35.

Section 080221

The subgrade was prepared during different time intervals as this section contained an "access road" for the local residents to cut across the construction site. This road also allowed the construction truck traffic access from the plant to the site. The access road was located from station 187+25 to 190+95 in a north-south direction. The subgrade at this location received a great deal more compaction (from truck traffic) than the rest of the section. Eventually the access road was moved west of the section to approximately station 184+50 so that work could begin on this section. That portion which contained the old access road was brought to grade and tied into the rest of the section. The subgrade for this section was essentially constructed as two separate parts.

Section 080224

The subgrade appeared to be well-compacted with very little loose surface material. This section had a high volume of construction truck traffic as it was located 100 ft east of the 136th Avenue overpass being built.

Section 080220

The subgrade appeared to contain a high moisture content and some pumping was evident in the transition zone between sections 080220 and 080224 at station 169+10. (The site received approximately 1.5 in of rain two days prior to the subgrade preparation for the lean concrete base.) No further action was taken to correct the pumping.

Section 080217

This section is located in a "wetland-like" area which contains a high water table. From station 158+00 to 159+00, a soft spot was removed approximately 6 ft in depth and 6 ft in width in the travel lane. This area was replaced with material (fine sand) from the construction site. From station 159+00 to 160+55, a second soft spot was removed approximately 4 ft in depth and 6 ft in width in the travel lane. This was replaced with material (fine sand) from the construction site. In both instances, two scrapers (CAT 631E) and one loader (CAT D9N) were used to remove, replace, and compact the soil.

As the end-dump trucks backed up to the paver to deliver the lean concrete base, the subgrade exhibited evidence of pumping across the travel lane at the following locations: station 157+05; from station 158+05 to 160+55; and at station 161+55. CDOT's state inspectors requested that the subgrade be compacted with a steel-wheel roller just in front of the trucks.

Paving of the LCB continued although rolling did not appear to remedy the poor subgrade condition and no further action was taken.

Section 080259

The subgrade was in fair condition and contained hairline cracks at station 220+50. A water truck kept the subgrade moist as the section was paved. This section of subgrade was prepared without a representative present to gather any construction notes prior to paving.

Phase 2 - Removal & Reconstruction

Section 080216

The "old highway," which consisted of both asphalt concrete and portland cement concrete, was removed, crushed to approximately 6 in pieces by dropping it and hitting it with a blade, and used as fill to stabilize the subgrade. The fill was approximately 3 ft of old highway material with 2 ft of cover material (fine sand) obtained from the site. The subgrade surface did not appear smooth and no further finishing was done. FWD testing was conducted on the subgrade.

Section *080213*

The fill on this section was approximately 4 ft of old highway material with 2 ft of cover material (fine sand) obtained from the site. The subgrade surface did not appear smooth and contained a divot 1-in in depth and 1/4-in in width which extended across both the travel and passing lanes (no further finishing was done). A plate bearing test and FWD test were conducted on the subgrade at station 111+15.

Section *080214*

The fill on this section was approximately 6 ft of old highway material with 2 ft of cover material (fine sand) obtained from the site. The subgrade surface appeared to be well-compacted. A plate bearing test and FWD test were conducted on the subgrade at station 118+20.

Section *080215*

The fill on this section was approximately 10 ft of old highway material with 2 ft of cover material (fine sand) obtained from the site. The subgrade surface appeared to be well-compacted. A 24-in, Class-3 concrete pipe was previously placed at station 125+15 approximately 10 to 13 ft deep. A plate bearing test and FWD test were conducted on the subgrade at station 125+15. (It was determined that the pipe was too deep to affect the plate bearing results.)

Section ***080218***

This section consisted of an approximately 6 ft cut. The subgrade surface appeared to be well-compacted. FWD testing was conducted on the subgrade.

Section ***080219***

This section consisted of an approximately 8 ft cut. The subgrade surface appeared to be well-compacted. FWD testing was conducted on the subgrade.

DENSE GRADED AGGREGATE BASE (DGAB)

Overview

During Phase 1 of this experiment, four sections, 080224, 080223, 080222, 080221 (from station 169+40 to 205+40), were constructed using 4 in of Dense Graded Aggregate Base (DGAB). In Phase 2, four sections, 080213, 080214, 080215, 080216 (from station 101+40 to 128+10), were constructed using 6 in of DGAB. The DGAB for Phase 1 was placed on August 4-5, 1993 (080221, 080222, 080223) and August 11, 1993 (080224, 080221). The DGAB for Phase 2 was placed on October 6-8, 1993 (080213, 080214, 080215, 080216).

During both phases, the DGAB was delivered using belly-dump trucks and was spread with a blade (CAT 140G). The trucks drove on the subgrade to deliver the DGAB. The sections were compacted using a steel-wheel roller (CAT CS563) and water was added hourly using a water truck. The grade was maintained using the same stringline control as used for the subgrade. The DGAB was trimmed using a GOMACO 9500. Elevation surveys were obtained on all sections with DGAB.

The weather conditions during DGAB placement in Phase 1 were cool and overcast with light rain on August 4-9 and a heavy rainstorm (1.25 in) on August 10th. It was partly cloudy and warm on August 11th. Weather conditions during Phase 2 consisted of clear and warm conditions on October 6th, cool and overcast with light rain falling on October 7th, and cold and breezy on October 8th.

The DGAB was a Class 5 (table 5) and conformed to the Special Construction Requirements, Section 304 and was pit run material.

The sampling and testing requirements for the DGAB consisted of bulk sampling, moisture and density tests, and elevation measurements on 080223, 080222, 080221, 080224, 080216, 080213, 080216, 080214, and 080215, with plate bearing tests on sections 080222, 080213, 080214, 080215. See appendix D for specific materials sampling and testing plan for each section.

Table 5. SHRP dense graded aggregate base (DGAB)

Physical Properties of Aggregates Sieve Analysis of Fine and Coarse Aggregate	
Sieve Size	Class 5 (LL not greater than 30)
2 in.	
1 ½ in.	100
1 in.	95 - 100
3/4 in.	--
No. 4	30 - 70
No. 8	--
No. 200	3 - 15

Phase 1 - New Alignment

Section 080223

On August 19, 1993, the DGAB was replaced from station 200+50 to 201+25 because the subgrade was not to grade. The DGAB for this portion was recompacted with a steel-wheel roller and then trimmed in conjunction with the remaining portion of the section. No FWD testing was conducted.

Section 080222

A plate bearing test and FWD testing were conducted on this section. The DGAB appeared to be well-compacted with no apparent anomalies.

Section 080221

Placement of the DGAB began on August 5, 1993, stopped at station 185+95 and was completed on August 11, 1993. Traffic was still driving across the access road until August 16, 1993. No FWD testing was conducted.

Section 080224

The DGAB was erroneously placed in the 1000 ft transition area between 080221 and 080224. The DGAB was removed from this area with a scraper (CAT 631E) and was spread on 080224 with a blade (CAT 140G). Compaction was attained with the scraper and blade. Water was not added due to a heavy rainstorm (1.25 in) the previous evening. No FWD testing was conducted.

Phase 2 - Removal & Reconstruction

Section 080216

The DGAB was placed on October 7, 1993. The base appeared to be well-compacted. Water was not added due to light rain during the day. FWD testing was conducted. Base was in good condition.

Section 080213

The DGAB was placed on October 7, 1993. A plate bearing test and FWD testing were conducted on October 9th. The base was in good condition.

Section 080214

The DGAB was placed on October 8, 1993. A plate bearing test was conducted on October 9, 1993. FWD testing was conducted on October 11, 1993. The base was in good condition.

Section 080215

The DGAB was placed on October 8, 1993. A plate bearing test and FWD testing were conducted on October 11, 1993. The base was in good condition.

PERMEABLE ASPHALT TREATED BASE (PATB)

Overview

Four drainable sections (080224, 080221, 080222, 080223) were constructed which required placing 4 in of Permeable Asphalt Treated Base (PATB) on 4 in of the Dense Graded Aggregate Base (DGAB). The PATB serves as a drainage layer in the pavement structure. The DGAB is used below the PATB to prevent the contamination of the PATB by the migration of fines from the subgrade. Edge drains (trench with drain pipe) were constructed longitudinally along the outside edge of the travel lane to collect drainage water from the PATB (figure 5).

All PATB drain sections were constructed within the new alignment and are located from station 169+40 to 205+40. After the DGAB placement was completed, an area was trenched for the edge drains. This operation began on August 12, 1993 utilizing a backhoe (CAT E70B). A 1 ft trencher was initially utilized, however, problems were encountered trying to maintain a smooth, clean cut. The trencher was then replaced with the backhoe although this made the trench a few inches larger than the design width of 12 in. The area was trenched to a depth of 14 in and a width of 21 in. The trench was excavated continuously throughout the entire length of each PATB test section. When the trench was completed, a length of geotextile fabric (Typar, 100 percent spunbonded polypropylene, by Exxon Chemical), was placed in the trench with a minimum of 2 ft on either side of the trench. Next, approximately 2 in of the aggregate mixture (table 6) utilized in the PATB (minus the asphalt cement) was put in the bottom of the trench with a truck and shovel, and the collector drain pipe was placed on top with the perforated side down. The collector pipes consisted of 4 in diameter plastic, perforated pipe. Upon placement of the collector pipes, they were covered with a 6 in layer of the same aggregate base mixture. The geotextile fabric was then "folded back" over the aggregate (figure 5). Discharge outlet pipes consisting of 4 in diameter nonperforated rigid pipe were installed at 250 ft intervals. Two transverse interceptor drains (figure 6) were installed perpendicular to the section in the transition zone between drained and undrained base structural sections (at station 185+00 and station 169+00) with the same procedure outlined for the edge drains.

The PATB mix design is found in table 7 and the sieve analysis in table 8. All sections were paved going west against the eastbound direction of traffic. The PATB was placed across both lanes as well as across the trench with the edge drains. The PATB was delivered in end-dump trucks from a continuous mix plant (drum) approximately 10 miles from the site. The grade was controlled using a stringline and all transitions were tapered. Elevation surveys were performed on all PATB sections.

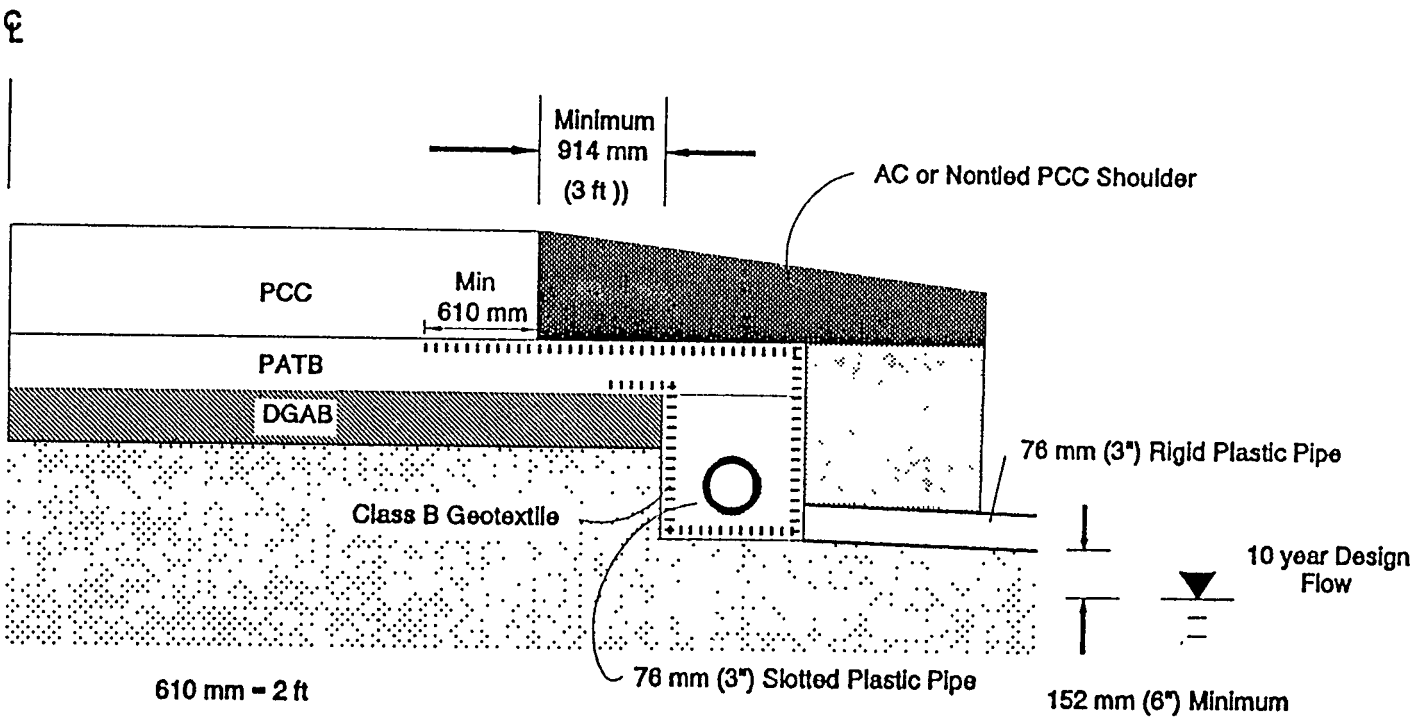


Figure 5. Edge drain detail.

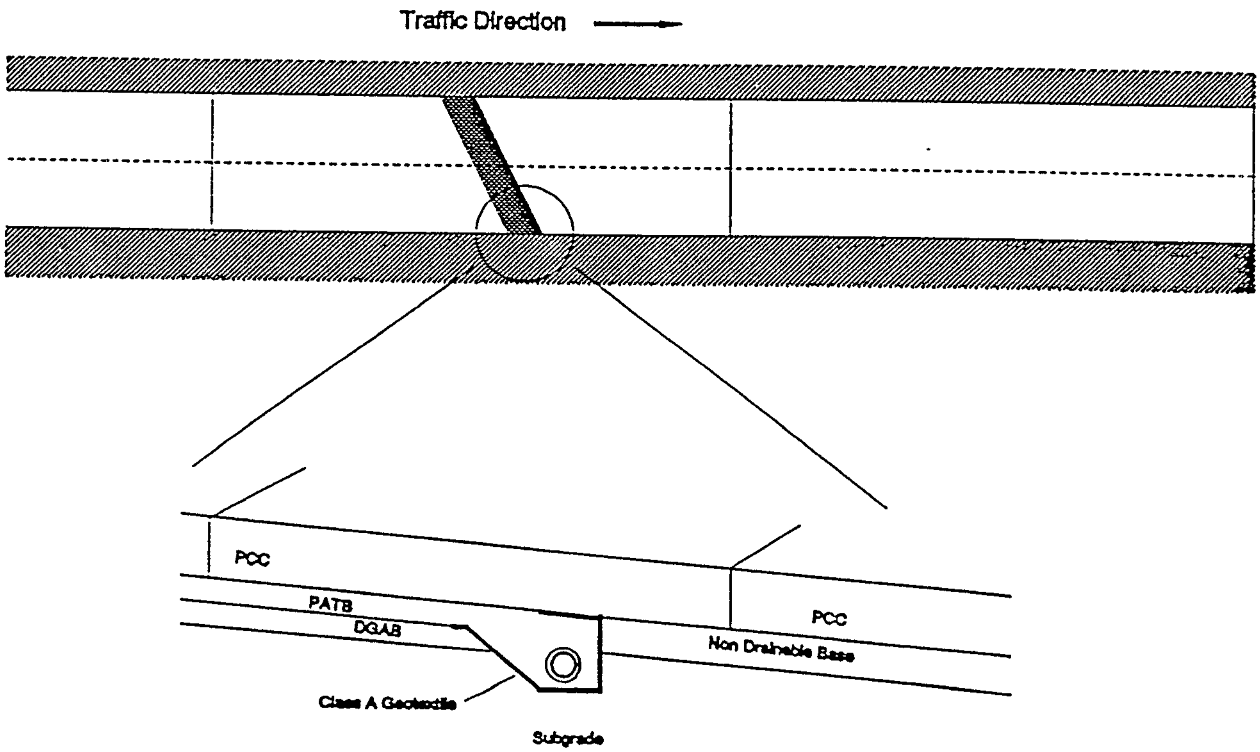


Figure 6. Transverse interceptor drain.

Table 6. SHRP edge drain backfill permeable asphalt treated base (PATB)

Sieve Analysis of Fine and Coarse Aggregates	
Sieve Size	Percent Passing % No. 57
1 ½ in.	100
1 in.	97
¾ in.	58
½ in.	13
⅜ in.	4
No. 4	1
No. 8	1
No. 50	1
No. 200	0.3

Percent Fractured Faces: 76%

Table 7. SHRP CDOT permeable asphalt treated base (PATB) mix design.

Sieve Size	CDOT #57 Specs. % Pass
2 in.	
1 ½ in.	100
1 in.	95 - 100
¾ in.	--
½ in.	25 - 60
⅜ in.	--
No. 4	0 - 10
No. 8	0 - 5
No. 16	
No. 30	
No. 50	
No. 100	
Material finer than #200 Sieve (%):	0 - 2

Target Asphalt Content: 2.5%
Source & Grade of AC: SIN/SIN AC-10
Additive: 0%

Table 8. SHRP CDOT permeable asphalt treated base (PATB)

Physical Properties of Aggregates Sieve Analysis of Fine and Coarse Aggregate		
Sieve Size	Size #57 Sample % Pass	CDOT Specs. #57 % Pass
2 in.		
1 ½ in.	100	100
1 in.	100	95 - 100
¾ in.	86	--
⅝ in.	63	
½ in.	40	25 - 60
⅜ in.	20	--
No. 4	8	0 - 10
No. 8	6	0 - 5
No. 16	6	
No. 30	5	
No. 50	4	
No. 100	4	
Material finer than #200 sieve (%):	3.1	0 - 2

% Moisture: 0.04

% Asphalt: 2.96

Section 080223

The PATB was placed over a period of hours on August 20, 1993 with a Blaw-Knox 657 track mounted paver in three 13.5 ft wide passes beginning with the eastbound left shoulder. The air temperature at the time of placement varied from 65°F to 90°F. The average temperature of the PATB mix at the time of placement was 190°F. The average thickness was 4.8 in before compaction. The mix was compacted in two passes with an Ingersoll-Rand DA40 steel-wheel roller (10,000 lbs). From station 200+00 to 200+50 the PATB in pass 1 appeared dull which indicated there were perhaps too many fines in the mix. The PATB was not replaced.

Section 080222

The PATB was placed over a period of seven hours on August 23, 1993 with the same paver as above. The section was paved in three 13.5 ft wide passes beginning with the eastbound left shoulder. The air temperature at the time of placement varied from 67°F to 96°F. The average temperature of the PATB mix at the time of placement was 199°F. The average thickness was 5.0 in before compaction. The mix was compacted with the same equipment previously referenced. From station 195+50 to 195+75 of pass 1, the mix appeared slightly dry indicating the presence of fines. Also, from station 193+25 to 193+50, fines were apparent in the mix placed approximately 7 ft from the edge of pavement. The PATB was not replaced, but a load was rejected prior to placing at station 198+75.

Section 080221

The PATB was placed on August 23, 1993 with the same paver previously referenced. The section was paved in four passes due to the widened lane portion of this section. In this section, the fourth pass was only 8 ft wide. The time period for this section was 12.0 hours. The air temperature at the time of placement varied from 60°F to 91°F. The average temperature of the PATB mix at the time of placement was 179°F. The average thickness was 4.8 in before compaction. The mix was compacted in two passes with the same equipment previously referenced. The next day, August 24, 1993, it was discovered that a section of PATB 13 ft wide, in the eastbound right shoulder, from station 189+00 to 187+25, was too low and consequently two more inches of PATB was added. This was the portion of the section that contained the old access road. Also, from station 185+30 to 187+20 the PATB was removed with a small loader and replaced due to excessive fines. The surface had a dull and "cloudy" appearance. When the PATB was removed from this portion, the fabric on the edge drain was torn from station 186+40 to 186+50. The fabric was replaced with a 3 ft overlap of new fabric over the old fabric on either side.

Section 080224

The PATB was placed on August 24, 1993 with the same paver previously referenced. The section was paved in three 13.5 ft wide passes over a period of six hours. The air temperature at the time of placement varied from 80°F to 91°F. The average thickness of the PATB mix was 4.9 in before compaction. The mix was compacted with the same equipment previously referenced. Some slight down drain was evident in three separate loads and they were rejected.

LEAN CONCRETE BASE (LCB)

Overview

Four non-drainable sections (080217, 080218, 080219, 080220) from station 140+75 to 168+80 were constructed which required placing 6 in of Lean Concrete Base (LCB) on the subgrade. LCB was placed on sections 080217 and 080220 during the construction of Phase 1 (August 30, 1993) and sections 080218 and 080219 during Phase 2 (October 14, 1993). The LCB was placed using a CAT SF550 paver with the end-dump trucks backing up on subgrade. The LCB was finished using a wet burlap drag, hand trowels, and long-handled steel floats. A Burke Wax Emulsion White D.O.T. curing compound was applied to the surface approximately 45 minutes after finishing during Phase 1 and 15 minutes after finishing during Phase 2. A second coat was applied within 24 hours prior to placing the PCCP surface. The LCB was placed in a 38 ft pass in Phase 1. A 32 ft width pass was placed in Phase 2 with an additional 6 ft shoulder placed October 25, 1993. The air temperature at the time of placement for Phase 1 was 70°F with overcast skies, and for Phase 2 was 45°F with overcast skies. Longitudinal joints were cut 1 ft to the right of centerline on all sections. Dowel baskets were anchored on all sections using steel nails driven with an air hammer. The lean concrete mix design is found in table 9 and the sieve analysis in table 10. Air content and slump were monitored in the field by CTL/Thompson, with air content specified between 4-9 percent and a maximum slump of 4 in.

Phase 1 - New Alignment

Section 080217

This section exhibited pumping across both lanes (see Subgrade section) as the LCB was being placed at the following locations: station 157+05; station 158+05 to 160+55; and station 161+55. The LCB mix changed at approximately station 161+55 from a 4 in slump to a 2 in slump. A visual inspection on September 7, 1993 yielded the anomalies listed in table 11. Overall, the finished surface appeared rough approximately 2.5 ft right of centerline, throughout the SHRP lane.

Section 080220

This section exhibited pumping across the travel lane (see Subgrade section) as the LCB was being placed at the following locations: station 166+60, 168+00. A visual inspection on September 7, 1993 yielded the anomalies listed in table 12. Overall, the finished surface appeared rough approximately 2.5 ft right of centerline throughout the SHRP lane.

Table 9. SHRP lean concrete base mix summary.

Average Proportion Properties	
Cement	204 lbs/yd^3
Fly Ash	61 lbs/yd^3
AEA	As Needed
Sand	1550 lbs/yd^3
Coarse Aggregate (No. 57)	1600 lbs/yd^3
Water	255 lbs/yd^3 (30.6 gals)
Slump	3 - 4 inches
Air Content	7 - 9%
WC + P Ratio	0.96 lb/lb
Unit Weight	135 - 138 pcf
Compressive Strength of Test Cylinders:	
3 days	400 - 460 psi
7 days	550 - 750 psi
Portland Cement	Southwestern Type I/II Low Alkali
Fly Ash	Pozzolanic Bridger Class F
AEA	Conchem Pave-Air
Sand	Frei, Pit No. 7 (Platte River)
Rock	Frei, #57, Pit 6 (Clear Creek Quarry)

Table 10. SHRP CDOT lean concrete base mix design.

Physical Properties of Aggregates Sieve Analysis of Fine and Coarse Aggregate				
Sieve Size	Size #57 Sample % Pass	CDOT 703 Specs. % Pass #57	Sand Sample % Pass	CDOT 703 Specs. % Pass
2 in.				
1 ½ in.	100	100		
1 in.	99	95 - 100		
¾ in.	87	--		
½ in.	55	25 - 60		
⅜ in.	39	--		100
No. 4	8	0 - 10	100	95 - 100
No. 8	4	0 - 5	97	--
No. 16			78	45 - 80
No. 30			44	--
No. 50			17	10 - 30
No. 100			3	2 - 10
Material finer than #200 sieve (%):	0.5	1.0 max.	0.6	3.0 max.

Table 11. Section 080217.

Location Stationing	Comment
156+60	transverse crack across the travel lane
157+25 to 157+50	round (2") depressions on the outside edge
157+75	LCB appears to have soft spots
158+20	transverse crack across the travel lane
158+20 to 158+25	segregation in outer wheel path - travel lane
158+75	transverse crack across the travel lane
159+30	2' from outer edge, LCB is gouged
159+50	transverse crack across the travel lane
160+36	transverse crack across the travel lane
160+70 to 160+80	low spot 3' wide, water pooled in bottom
161+30	transverse crack across the travel lane
161+80	transverse crack across the travel lane

Table 12. Section 080220.

Location Stationing	Comment
162+80	transverse crack across the travel lane
163+30	transverse crack across the travel lane
163+55	segregation approx 6" wide, 2' long in midlane
163+80	transverse crack across the travel lane
164+30	transverse crack across the travel lane
164+60	transverse crack across the travel lane
164+80	small depression, 1" depth - 3' from the edge in travel lane
165+20	transverse crack across the travel lane
165+80	transverse crack across the travel lane
166+15	transverse crack across the travel lane

Phase 2 - Removal & Reconstruction

Section 080218

The LCB was placed on October 14, 1993 from 12:30 p.m. until 4:05 p.m. Light rain began falling off and on about 3:05 p.m. The first ten trucks on the site were rejected due to high air content (≈11.5 percent). This section was paved with a 32 ft width pass. The shoulders were paved 12 days later (October 26, 1993) due to one week of heavy rain in the area. A visual inspection on October 21, 1993 revealed broken edges throughout the entire section. The finished surface was muddy and there were areas containing water stains. The mud was cleaned off at the request of CDOT inspectors.

Section 080219

The LCB was placed on October 14, 1993 from 4:05 p.m. until 7:50 p.m. Sunset occurred at approximately 6:20 p.m. and the final 250 ft of the section was placed in the dark using portable lights. The temperature was approximately 40°F with heavy rain beginning at 7:10 p.m. A visual inspection on October 21, 1993 revealed broken edges throughout the entire section. The finished surface was muddy and there were areas containing water stains. The mud was cleaned off at the request of CDOT inspectors.

PORTLAND CEMENT CONCRETE PAVEMENT (PCCP)

Overview

The experimental design included two levels of concrete slab thickness, 8 in and 11 in, and two levels of flexural strength, 550 psi and 900 psi as determined from third point loading tests at 14 days. The experiment also included two different lane widths, 12 ft and 14 ft. All sections were constructed with perpendicular joints with a uniform joint spacing of 15 ft. Dowels were placed mid-depth using basket assemblies and were aligned parallel to the longitudinal direction of the lane. The dowel baskets were anchored using 5/16 in diameter, 12 in steel pins with a 45° cut at the bottom. A piece of 3/16 in steel bar was welded onto the top of the pin to act as a hook and hold the baskets in place. Dowels were 18 in in length, spaced at 12 in on center and coated with grease. Dowel bars were 1-1/4 and 1-1/2 in diameter for the 8 in and 11 in thick pavements, respectively. The dowel bar alignments were not checked after paving.

All sections were constructed with a slip-form paving operation which incorporated the side-dump procedure. First, the concrete was dumped into a side belt which fed to the track mounted spreader (GOMACO PS60) where the concrete was distributed by augers across the lane. Next, a track mounted slip-form paver (CAT SF550) consolidated the concrete with 26 internal vibrators spaced 18 in apart at a depth of 6 in below the surface. Screeds then struck off the concrete to its design thickness. Following this process, a wet burlap drag and a mechanical oscillating float were used to ready the surface for final finishing. The edges were kept straight and smooth with hand trowels. Two long-handled steel floats, one on either side, were used to smooth and level the surface. An astro-turf drag was then pulled across the surface for texture. A string line was used to make an indentation across the lane at all joint locations (every 15 ft). This was followed by transverse tining with a tining machine utilizing a 14 ft bar with metal tines. Finally, a white wax-base curing compound was applied to the surface within 45 minutes of placing the concrete.

As the paver proceeded, tie bars were manually placed into a tie bar inserter and then mechanically inserted into the concrete. Tie bars were placed at the inside shoulder (non-SHRP lane) and at the centerline longitudinal joint. The bars were held down for approximately 15 seconds to allow the concrete to envelope the bar and then the device was lifted up for the next tie bar. A measuring wheel with a counting device was mounted to the paver and indicated when to insert the bars. The tie bars were 3 ft long, epoxy coated deformed No.5 bars of grade 40 steel, spaced at 30 in on center.

For both the 550 psi and 900 psi concrete mixes, the target values for slump were 1 to 2-1/2 in and for air content were 5 to 8 percent. Slump and air content values were monitored in the field by CTL/Thompson. These tests were taken from the first three delivery trucks at each section, then every hour until the mix (psi) changed. The 550 psi mix design is found in table 13 and the sieve analysis in table 14. The 900 psi mix design is found in table 15 and the sieve analysis in table 16. The CDOT Class P Standard mix design (section 080259) is found in table 17 and the sieve analysis in table 18.

Table 13. SHRP 550 psi mix summary, average proportion properties.

Cement	399 lbs/yd^3
Fly Ash	100 lbs/yd^3
AEA	6 3 ozs/yd^3
Sand	1430 lbs/yd^3
Rock	1720 lbs/yd^3
Water	236 lbs/yd^3
Slump	1-3/4 inches
Air Content	6.4%
WC+P Ratio	0.47 lb/lb
Density	143.3 pcf
Flexural Strength: 7 days 14 days	 520 psi 572 psi
Portland Cement	Southwestern Type I/II Low Alkali
Fly Ash	Pozzolanic Bridger Class F
AEA	Conchem Pave-Air
Sand	Frei, Pit No. 7 (Platte River)
Rock	Frei, #57, Pit 6 (Clear Creek Quarry)

Required average 14-day flexural strength: 525 to 575 psi
Allowable variation of average strength: 165 psi max.
Cumulative variation of average strength: 25 psi actual

Table 14. SHRP - CDOT 550 psi mix design - physical properties of aggregates.

Sieve Analysis of Fine and Coarse Aggregate				
Sieve Size	Size #57 Sample % Pass	CDOT 703 Specs. % Pass - #57	Sand Sample % Pass	CDOT 703 Specs. % Pass
2 in.				
1-1/2 in.	100	100		
1 in.	99	95 - 100		
3/4 in.	87	--		
1/2 in.	55	25 - 60		
3/8 in.	39	--		100
No. 4	8	0 - 10	100	95 - 100
No. 8	4	0 - 5	97	--
No. 16			78	45 - 80
No. 30			44	--
No. 50			17	10 - 30
No. 100			3	2 - 10
Material finer than #200 sieve (%)	0.5	1.0 max.	0.6	3.0 max.

Table 15. SHRP 900 psi mix summary - average proportion properties.

Cement	749 lbs/yd^3
Fly Ash	150 lbs/yd^3
AEA	3.0 ozs/yd^3
Sand	935 lbs/yd^3
Rock	1865 lbs/yd^3
Water	257 lbs/yd^3
Slump	1-1/2 inches
Air Content	5.7%
WC+P Ratio	0.29 lb/lb
Density	146.4 pcf
Flexural Strength:	
7 days	845 psi
14 days	905 psi
Portland Cement	Southwestern Type I/I Low Alkali
Fly Ash	Pozzolanic Bridger Class F
AEA	Conchem Pave-Air
WRA	Conchem 50 (4 ozs per cwt)
Sand	Frei, Pit No. 7 (Platte River)
Rock	Frei, #57, Pit 6 (Clear Creek Quarry)

Required average 14-day flexural strength: 860 to 940 psi
Allowable variation of average strength: 250 psi max.
Cumulative variation of average strength: 45 psi actual

Table 16. SHRP - CDOT 900 PSI mix design - physical properties of aggregates.

Sieve Analysis of Fine and Coarse Aggregate				
Sieve Size	Size #57 Sample % Pass	CDOT 703 Specs. % Pass #57	Sand Sample % Pass	CDOT 703 Specs. % Pass
2 in.				
1-1/2 in.	100	100		
1 in.	99	95 - 100		
3/4 in.	87	--		
1/2 in.	55	25 - 60		
3/8 in.	39	--		100
No. 4	8	0 - 10	100	95 - 100
No. 8	4	0 - 5	97	--
No. 16			78	45 - 80
No. 30			44	--
No. 50			17	10 - 30
No. 100			3	2 - 10
Material finer than #200 sieve (%)	0.5	1.0 max.	0.6	3.0 max.

Table 17. SHRP - CDOT class P mix design - average proportion properties.

Cement	565 lbs/yd^3
Fly Ash	113 lbs/yd^3
AEA	5.6 ozs/yd^3
WRA (Conchem 50 @ 2.5 ozs/cwt)	17.0 ozs
Sand	1200 lbs/yd^3
Coarse Aggregate (No. 57)	1730 lbs/yd^3
Water	247 lbs/yd^3 (29.7 gals)
Slump	1-1/2 inches
Air Content	6.2%
WC+P Ratio	0.36lb/lb
Unit Weight	142.2 pcf
Temperature	65°F
Compressive Strength of Test Cylinders: 24 hours 3 days 7 days 28 days	 1850 psi 3770 psi 5035 psi 6315 psi
Portland Cement	Southwestern Type I/I Low Alkali
Fly Ash	Pozzolanic Bridger Class F
AEA	Conchem Pave-Air
Sand	Frei, Pit No. 7 (Platte River)
Rock	Frei, #57 Blend (Pit No. 2)

Table 18. SHRP - CDOT class P standard mix design - physical properties of aggregates.

Sieve Analysis of Fine and Coarse Aggregate							
Sieve Size	Size #57 Sample % Pass	Size #4 Sample % Pass	55/54 Blend #57/#4 % Pass	CDOT 703 Specs % Pass		Sand Sample % Pass	CDOT 703 Specs % Pass
				#57	#467		
2 in.		100	100		100		
1-1/2 in.	100	96	98	100	95-100		
1 in.	99	57	80	95-100	--		
3/4 in.	87	18	56	--	35-70		
1/2 in.	55	1	31	25-60	--		
3/8 in.	39	1	22	--	10-30		100
No. 4	8	0.5	5	0-10	0-5	100	95-100
No. 8	4	--	3	0-5	--	97	--
No. 16						78	45-80
No. 30						44	--
No. 50						17	10-30
No. 100						3	2-10
Material finer than #200 sieve (%)	0.5	0.3	0.4	1.0 max	1.0 max	0.6	3.0 max

The portable batch plant was located on site and contained two bins; one for cement and one for fly ash. The mixing equipment was a central batch (12 yd^3) and was computerized. A badger meter was used for measuring water. The water used for the batch plant was obtained from the City of Brighton's domestic water supply. A concrete plant inspection was conducted on July 13, 1993 and was found to be satisfactory.

All sections in Phase 1 (080259, 080220, 080221, 080222, 080223, 080224, and 080217) were paved going west against the direction of traffic (eastbound lanes). All sections in Phase 2 (080213, 080214, 080215, 080216, 080218, and 080219) were paved in the direction of traffic (eastbound).

Phase 1 - New Alignment

Section *080223*

The 550 psi concrete was placed on September 3, 1993 from 7:50 a.m. until 10:35 a.m. in a 38 ft pass. The air temperature varied from 55°F to 68°F. Twelve air content and slump tests were conducted on this section with two of each required for the bulk samples. The average air content was 6.3 percent and the average slump was 1.7 in. Personnel from CDOT's materials testing laboratory were on site to conduct air content, slump, and unit weight tests in addition to those required by SHRP/LTPP. A comparison of these tests conducted side-by-side (CDOT vs. CTL/Thompson) from the same batch resulted in an unacceptable difference (greater then 0.5 percent as per CDOT) between the two (CTL/Thompson air= 8.0 percent and CDOT air=9.3 percent). Paving was halted at station 201+00 for approximately 15 minutes. These tests were repeated twice more and then a different meter was brought out for CTL/Thompson to use. Three more tests were conducted and found to be within the acceptable range. From station 199+25 to 202+00 the dowels were greased on the wrong end and had to be greased again as per a request by CDOT. The transition from 11 in PCCP to 8 in PCCP was started at station 199+25 and completed at 198+50. The transition from the 550 psi mix to the 900 psi mix was completed at station 198+75.

Section 080222

The 900 psi concrete was placed on September 3, 1993 from 11:20 a.m. until 2:30 p.m. in a 38 ft pass. The air temperature varied from 70°F to 78°F. Eight air content and four slump tests were conducted on this section with three of each required for the bulk samples. The average air content was 5.0 percent and the average slump was 2.2 in. Personnel from CDOT's materials laboratory were on site to conduct air content, slump, and unit weight tests. A comparison of the side-by-side tests conducted resulted in acceptable values. Paving stopped at station 196+00 for 10 minutes, at station 195+35 for 15 minutes, and at station 195+15 for 5 minutes, while waiting for tests to be run. At station 194+00 side panels on the screed had to be adjusted resulting in paving being stopped for 10 minutes. The transition from the 900 psi mix to the 550 psi mix was completed at station 191+75.

Section 080221

The 550 psi concrete was placed on September 3, 1993 from 4:00 p.m. until 6:10 p.m. in a 38 ft pass. The air temperature varied from 76°F to 80°F. Nine air content and four slump tests were conducted on this section with one of each required for the bulk samples. The average air content was 8.0 percent and the average slump was 1.9 in. A 4 in pipe had been installed and was discovered "sticking out of the PATB surface" approximately 2 ½ in at station 190+25, about 3 ft from outside edge of the travel lane. After a discussion with CDOT personnel and the contractor, it was not known for what purpose this pipe was intended. The pipe was sawed off flush with the PATB, capped, and paved over. At station 186+00, the dowel basket in the passing lane (non-SHRP) was pulled out during the paving operation and not replaced.

Section 080224

The 900 psi concrete was placed on September 7, 1993 from 8:00 a.m. until 3:05 p.m. when a severe windstorm (low visibility and heavy dust) moved into the area. At approximately 3:10 p.m. it began raining heavily along with the severe winds. At this time, the crew began trying to cover the new pavement but were struggling due to the strong winds and heavy rainfall. At 3:45 p.m. the section from station 185+30 to 172+90 was finally covered with a heavy plastic tarp. At 3:55 p.m., a construction joint was placed at station 172+90 within the monitoring section. The 1000 ft transition between 080221 and 080224 (westbound direction) was paved using the 550 psi mix. The 900 psi mix began at station 176+40. The PATB fabric located on the edge drains appeared to be in poor condition with tears from station 176+15 to 175+90. Along the entire length of 080224, the edge drains were damaged and contained a "coating" of soil and PCC runoff from the sawcutting process. This was pointed out to CDOT's engineer on the project with the suggestion that the edge drain be checked for damage and any repairs noted. The fabric was torn and dirty, and the trench crushed up to 6 in in some locations due to the paver running over it.

The 900 psi concrete paving began at station 172+90 (the construction joint from previous day's storm - 2 in of rain) on September 8, 1993 at 7:30 a.m. and was completed at 11:05 a.m. The air temperature varied from 45°F to 60°F. The belt on the feeder to the spreader broke at station 169+90 at 10:18 a.m. and five trucks were rejected at 10:50 a.m. because their time limit expired. The paving operation began at 10:53 a.m. and stopped at station 169+25 due to the belt breaking again. A halt was called on paving operations for the day until a new belt could be placed on the spreader.

Three air content and three slump tests were conducted on this section. A bulk sample was not taken on this day due to extreme weather conditions. The average air content was 5.8 percent and the average slump was 1.5 in. On the following day, seven air content and seven slump tests were conducted on the portion from the construction joint westbound to the beginning of the section at station 169+40. One test for each was required along with the bulk sample. The average air content was 6.8 percent and the average slump was 2.1 in.

Section 080220

The 900 psi concrete for this section was placed on September 9, 1993 from 7:15 a.m. until 11:10 a.m. in a 38 ft pass. The air temperature varied from 55°F to 68°F. Five air content and five slump tests were conducted on this section with two required for the bulk samples. The average air content was 6.3 percent and the average slump was 1.9 in. The transition from 11 in PCCP to 8 in PCCP began at station 162+65 and was completed at station 162+05. The transition from the 900 psi mix to the 550 psi mix was also completed at station 162+05.

A third coat of curing compound was applied to the lean concrete base because the second coat required by the experimental design had been applied more than 24 hours prior to paving. (This was done before the rainstorm and the equipment problems mentioned above. The specifications called for an application of the curing compound within 24 hours of paving.) The curing compound was applied from station 167+80 to 162+65. At station 166+80 the spreader was stopped for 9 minutes due to the wet conditions of the soil on the site. The spreader was stuck and had to be pulled out using the paving equipment.

Section 080217

The 550 psi concrete for this section was placed on September 9, 1993 from 12:30 p.m. until 4:15 p.m. The air temperature varied from 72°F to 80°F. Six air content and six slump tests were conducted on this section with three required for the bulk samples. The average air content was 6.9 percent and the average slump was 1.3 in. The forms on the paver were too large (10 in) for the 8 in lift required. The paver was halted at station 161+00 from 1:10 p.m. until 1:37 p.m. to shorten the forms. From approximately station 159+00 to station 157+00 the spreader was sinking on the outside edge of the SHRP lane due to heavy rain in the area. The spreader had to be supported with wooden planks and chunks of old concrete highway.

Section 080259

This section is a control section for the State of Colorado and was paved with their standard 650 psi concrete mix. Paving began at 7:10 a.m. and concluded at approximately 12:00 p.m. The air temperature varied from 55°F to 80°F. Three air content tests yielded 8,6, and 5.1 percent air. The slump was maintained at 2 in. Overall, no major interruptions were encountered at this section.

Phase 2 - Removal & Reconstruction

Section 080216

The 900 psi concrete was placed on October 11, 1993 from 9:30 a.m. until 2:10 p.m. The air temperature varied from 45°F to 70°F. Paving stopped at station 105+90 for 7 minutes and at station 107+00 for 8 minutes while waiting for delivery trucks. The transition from the 900 psi mix to the 550 psi mix was completed at station 107+50 and from 11 in PCCP to 8 in PCCP at station 107+50. Six air content tests and six slump tests were conducted with one required for bulk sample. The average air content was 7.3 percent and the average slump was 2.2 in.

Section 080213

The 550 psi concrete was placed on October 11, 1993 from 3:40 p.m. until 6:00 p.m. The paving stopped at station 110+15 for 15 minutes due to equipment problems. The air temperature varied from 70°F to 72°F. Five air content tests and five slump tests were conducted with one required for bulk sample. The average air content was 6.1 percent and the average slump was 1.0 in.

Section 080214

The 900 psi concrete was placed on October 13, 1993 from 7:15 a.m. until 10:00 a.m. at station 114+50 with 900 psi mix. The air temperature varied from 50°F to 65°F. The transition from the 900 psi mix to the 550 psi mix was completed at station 121+75. Five air content tests and five slump tests were conducted with one required for bulk sample. The average air content was 7.2 percent and the average slump was 2.3 in.

Section 080215

The 550 psi concrete was placed on October 12, 1993 from 10:20 a.m. until 2:30 p.m. The air temperature varied from 65°F to 72°F. The 550 psi mix was placed to station 128+30. Two air content tests and two slump tests were conducted with one required for bulk sample. The average air content was 6.7 percent and the average slump was 1.0 in.

Section 080218

The 900 psi concrete was placed on October 21, 1993 from 10:00 a.m. until 3:50 p.m. The air temperature varied from 40°F to 55°F. The paving stopped at station 141+25 for 2 hours and 40 minutes due to equipment problems (broken belt on the feeder). The paving stopped again for 20 minutes at station 143+40 because the end-dump trucks were getting stuck in the mud. (Site was extremely wet and muddy due to heavy rainstorms the previous 7-day period.) Dowels were accidentally torn up by the paving equipment at station 141+50 in the SHRP lane. The dowels were not replaced. One air content test and one slump test was conducted. The air content was 6.6 percent and the slump was 2.5 in.

Section 080219

The 550 psi concrete was placed on October 22, 1993 from 8:45 a.m. until 1:10 p.m. The air temperature varied from 38°F to 48°F. Paving on this section progressed smoothly. Four air content tests and four slump tests were conducted with one required for bulk sample. The average air content was 6.3 percent and the average slump was 1.6 in.

SUMMARY

SUBGRADE

High groundwater table, rain and pumping in some sections during subsequent layer placement are the primary conditions of note on the new alignment sections. On the old highway, the embankment consisted of various thicknesses of crushed and pulverized material of the old highway, overlain with fill of fine sand from a cut area.

DENSE GRADED AGGREGATE BASE (DGAB)

The placement of the DGAB on eight of the thirteen sections proceeded without any major problems. The other five sections did not require DGAB.

PERMEABLE ASPHALT TREATED BASE (PATB)

There were some minor problems encountered during the placement of the PATB. These consisted primarily in the trenching of the DGAB and SG. The problem was corrected by using a backhoe instead of a trenching machine. In section 080221, the mix placed was too fine in areas and removed and replacement was performed. (See the section entitled Permeable Asphalt Treated Base.)

LEAN CONCRETE BASE (LCB)

No obvious problems were noted with regard to the placement of the lean concrete base other than those that were weather related. (See section titled Lean Concrete Base.)

PORTLAND CEMENT CONCRETE PAVEMENT (PCCP)

Again, weather and equipment breakdown created some problems with the PCCP paving; otherwise the work met the intentions of the experiment design. The contractor felt the placement of the 550 psi mix was easier to work with due to the high plasticity of the 900 psi mix.

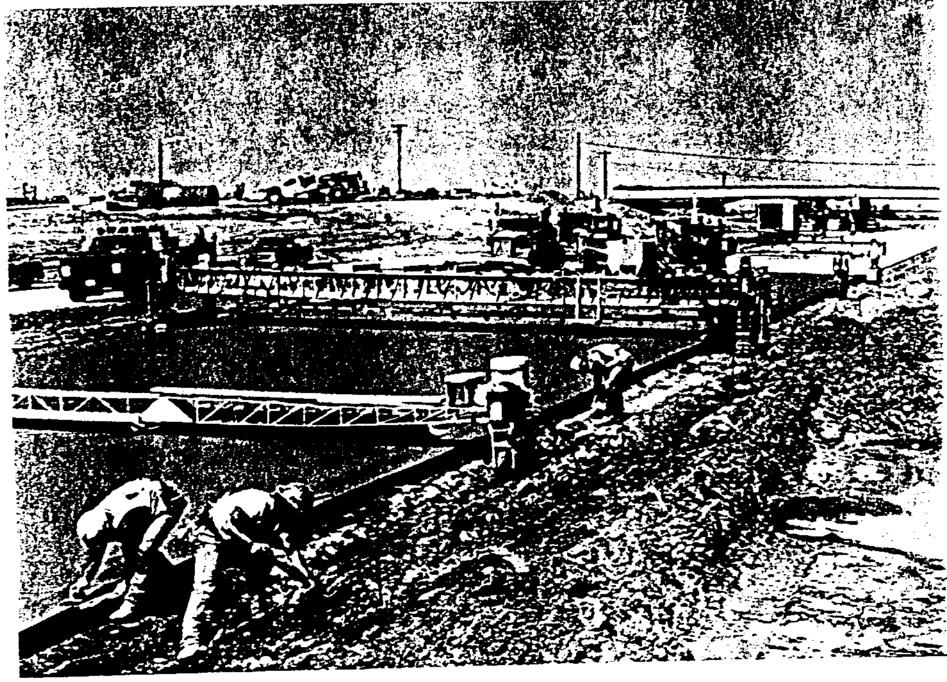
JOINTS

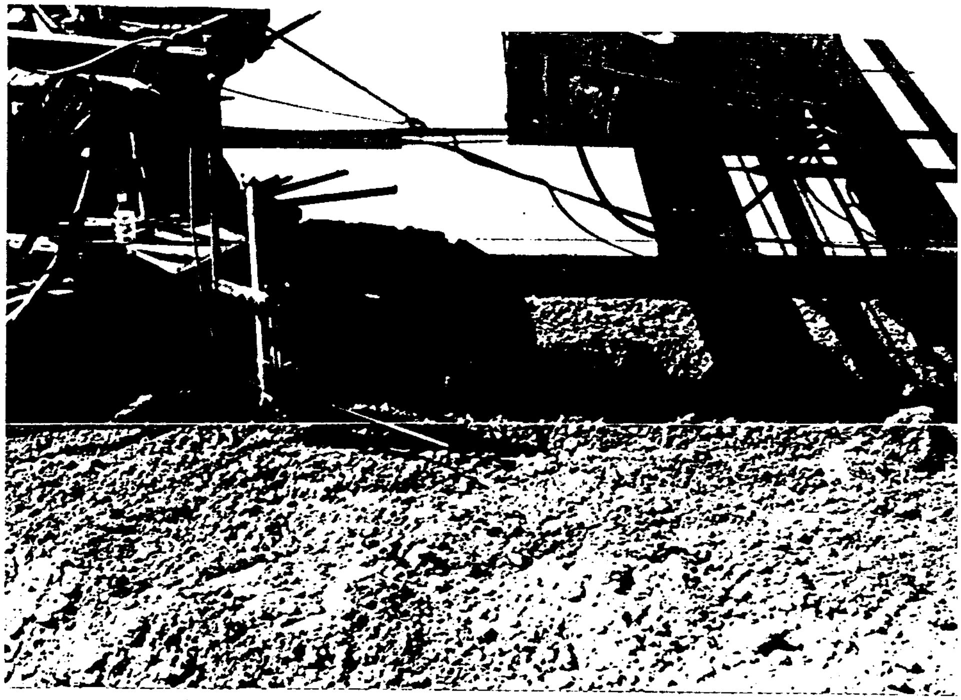
All joints were cut within 8 hours and depended upon the set time of the 550 psi mix and the 900 psi mix. The joints were cut with a diamond wheel sawcutter and were sawed twice to widen. The joint sealant, Dow Corning 888 silicone sealant, was placed after the second cut. The shoulder joint along all sections was sawn full depth.

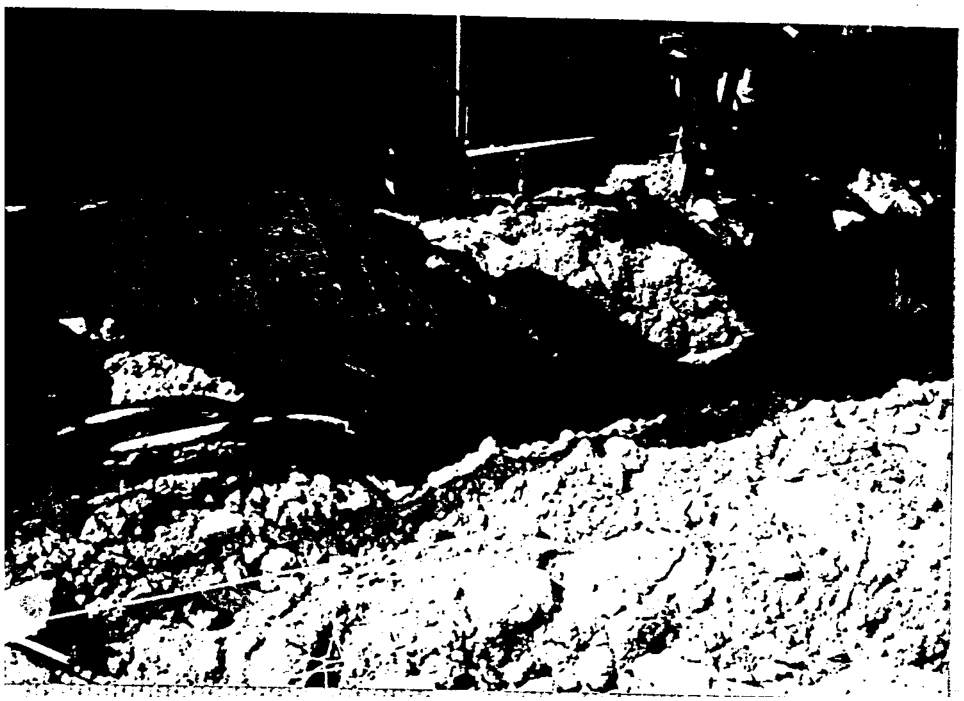
In general then, the SPS-2 construction met the requirements of the experiment and should provide valuable performance data for many years to come.

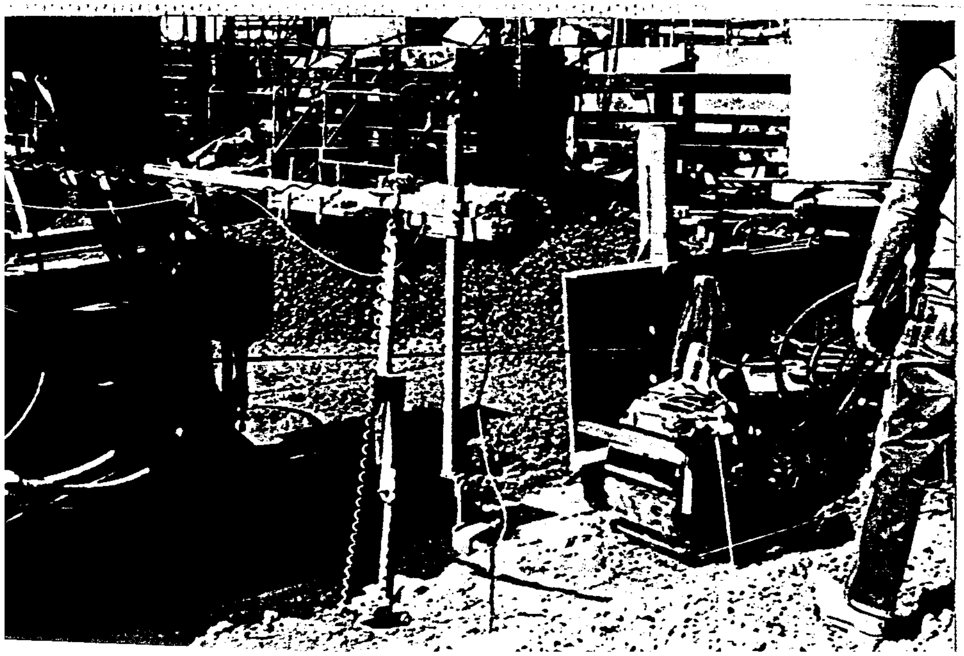
APPENDIX A

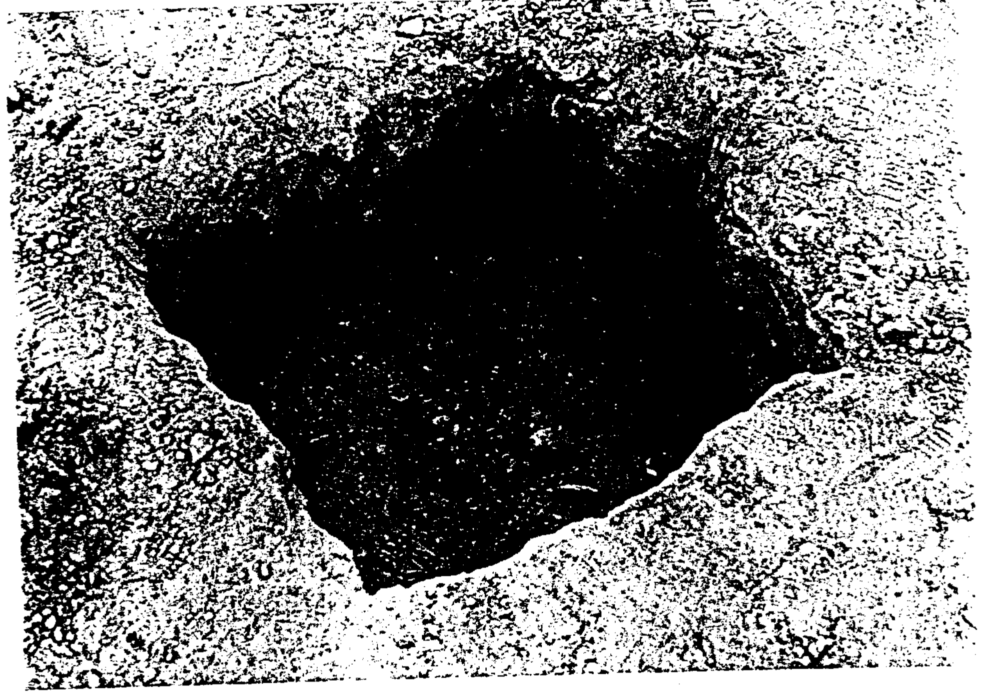
PROJECT PHOTOGRAPHS

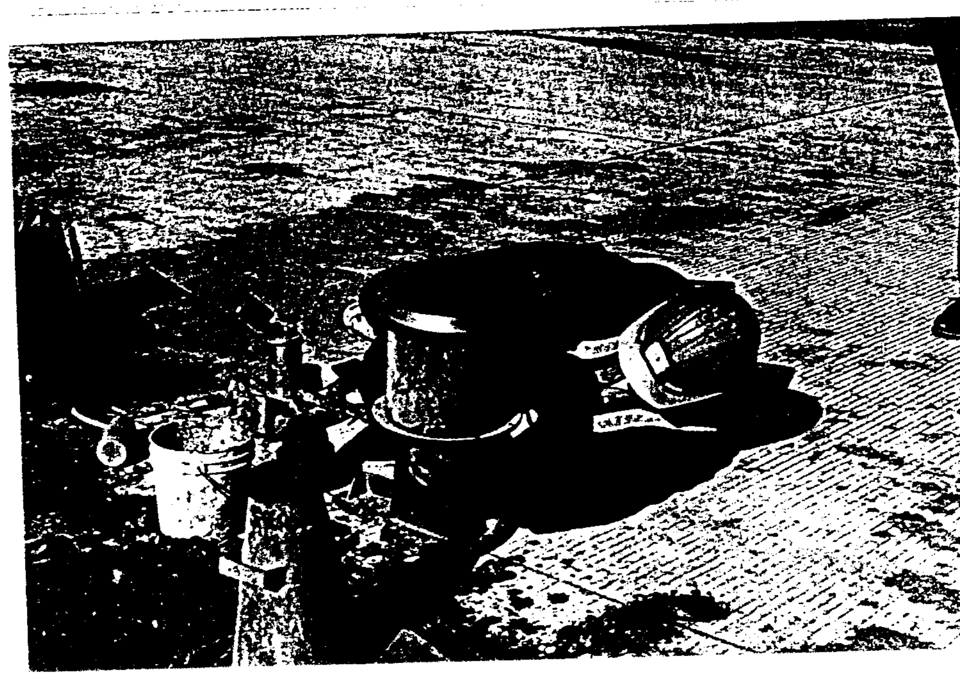


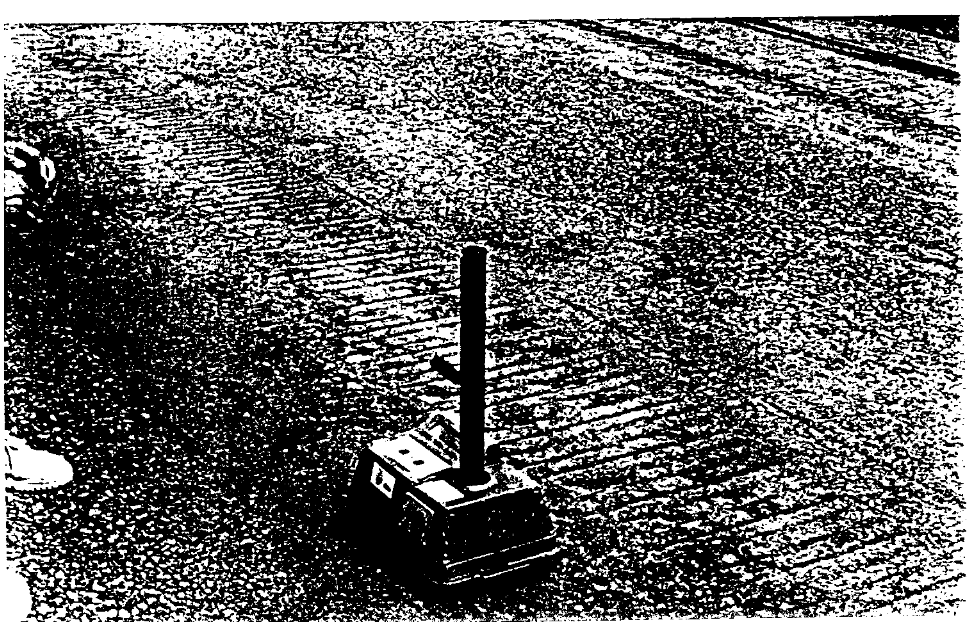


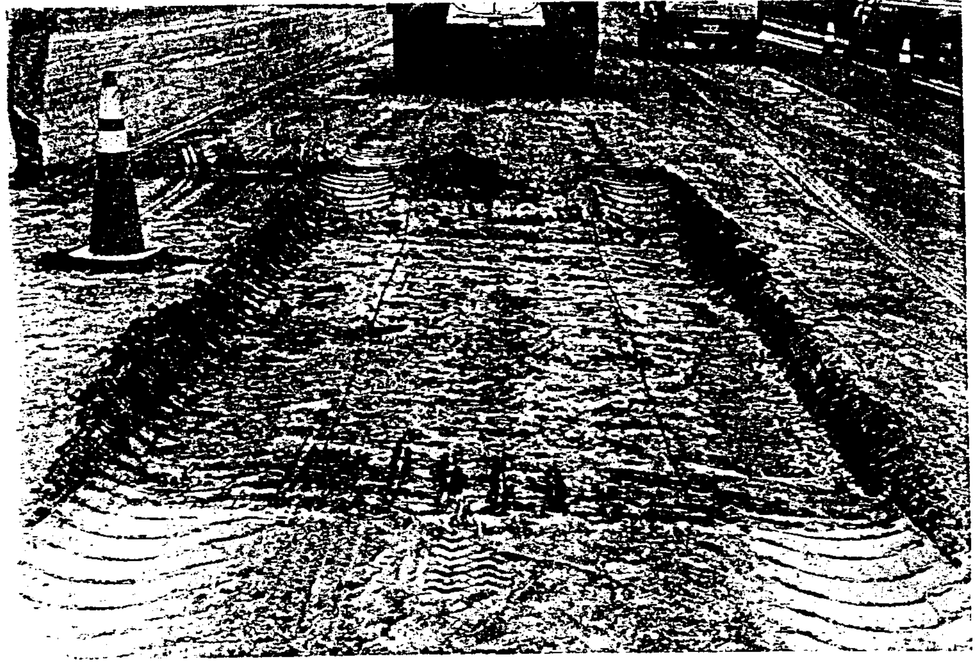


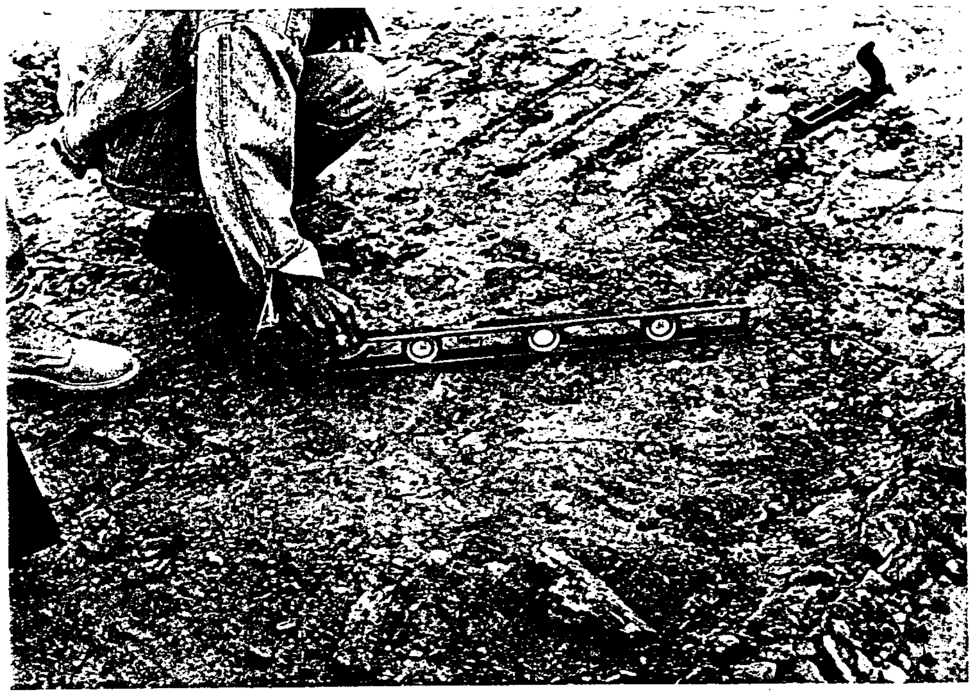


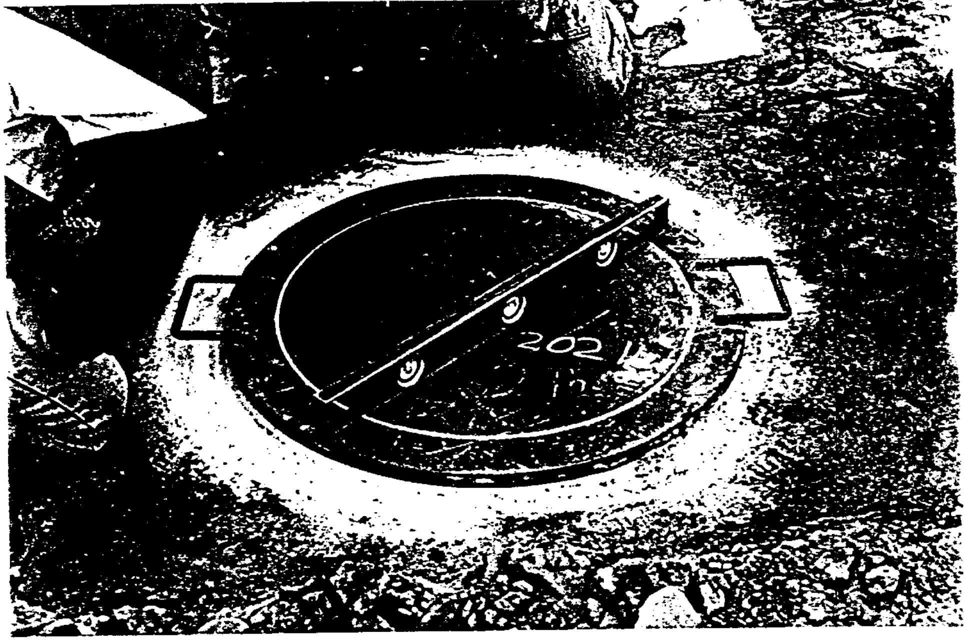


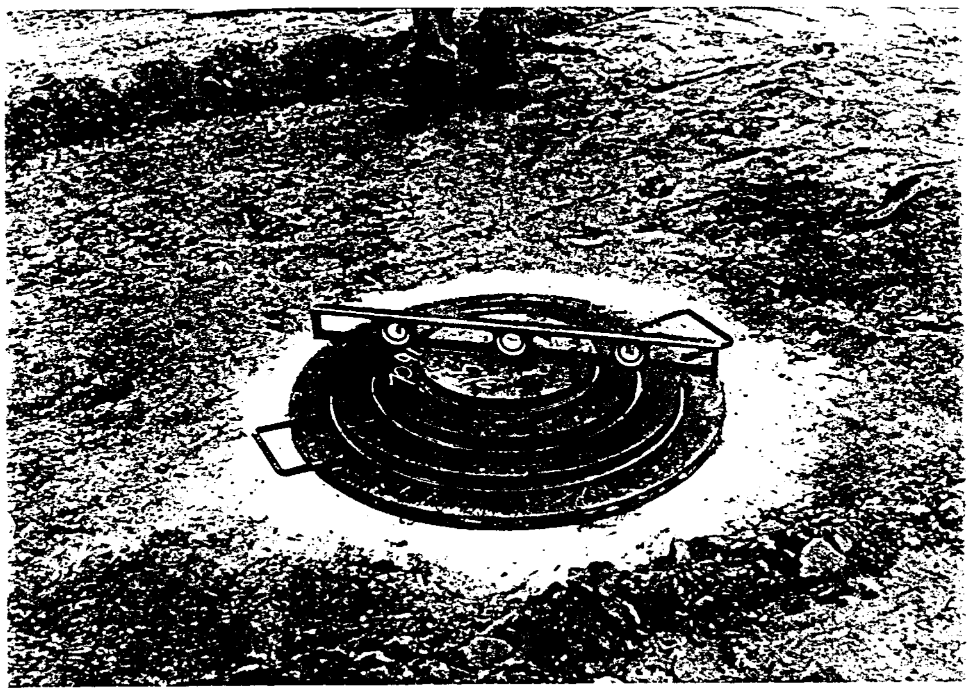


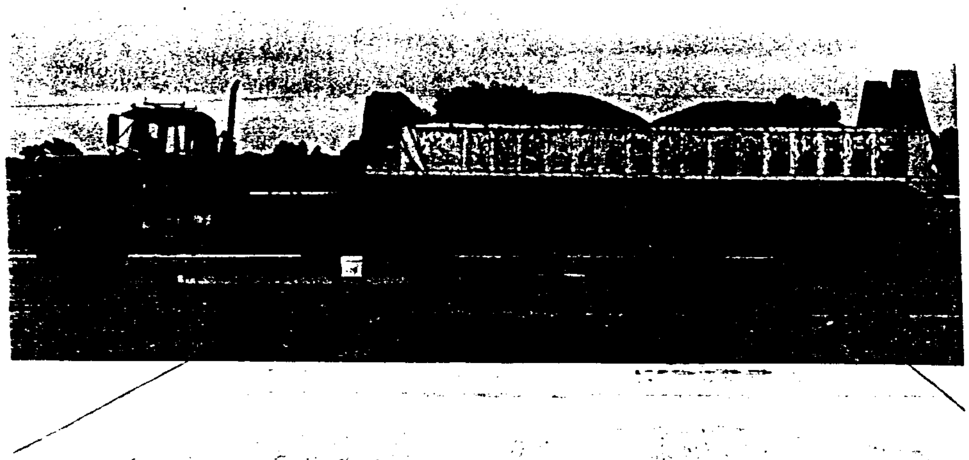


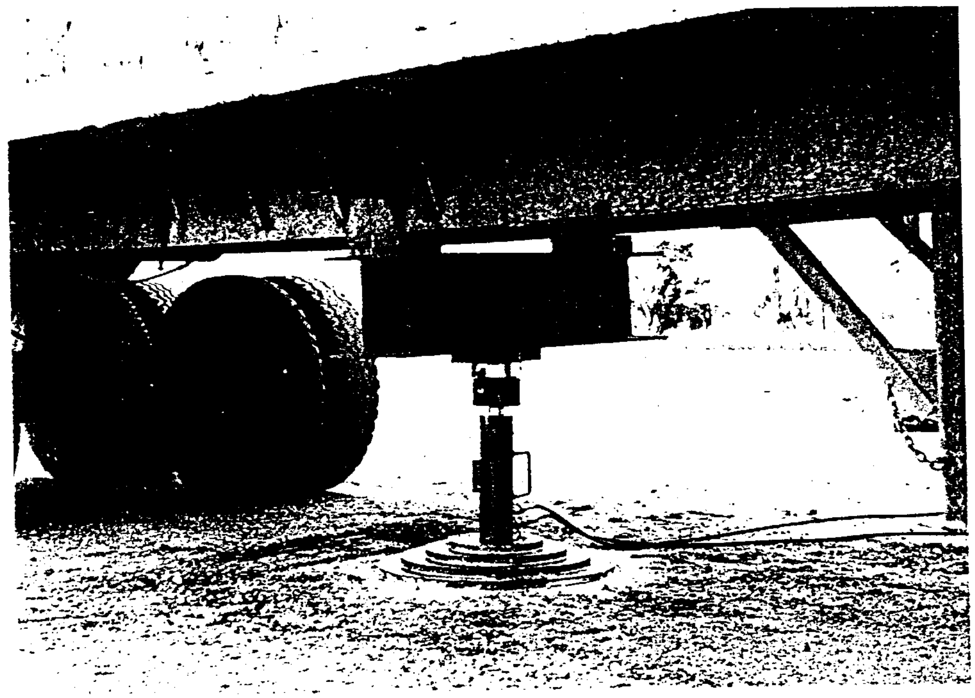


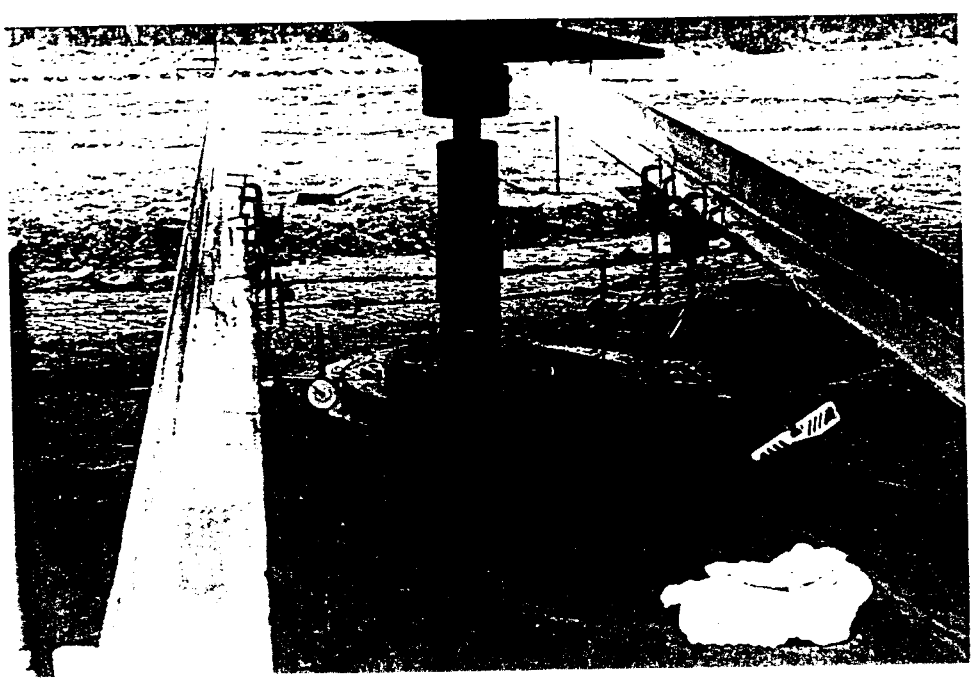


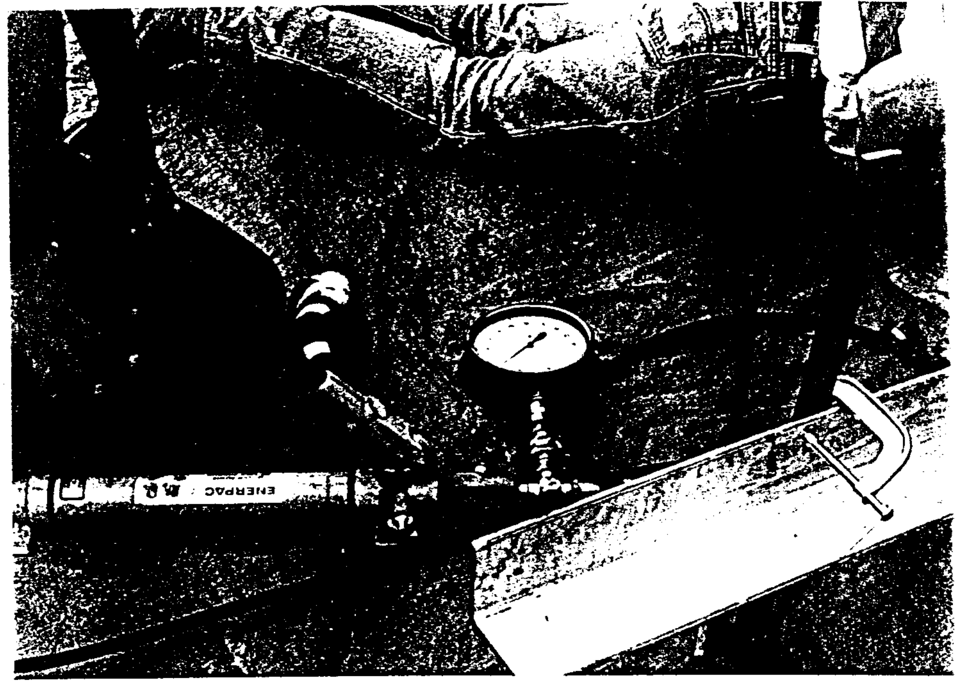

202

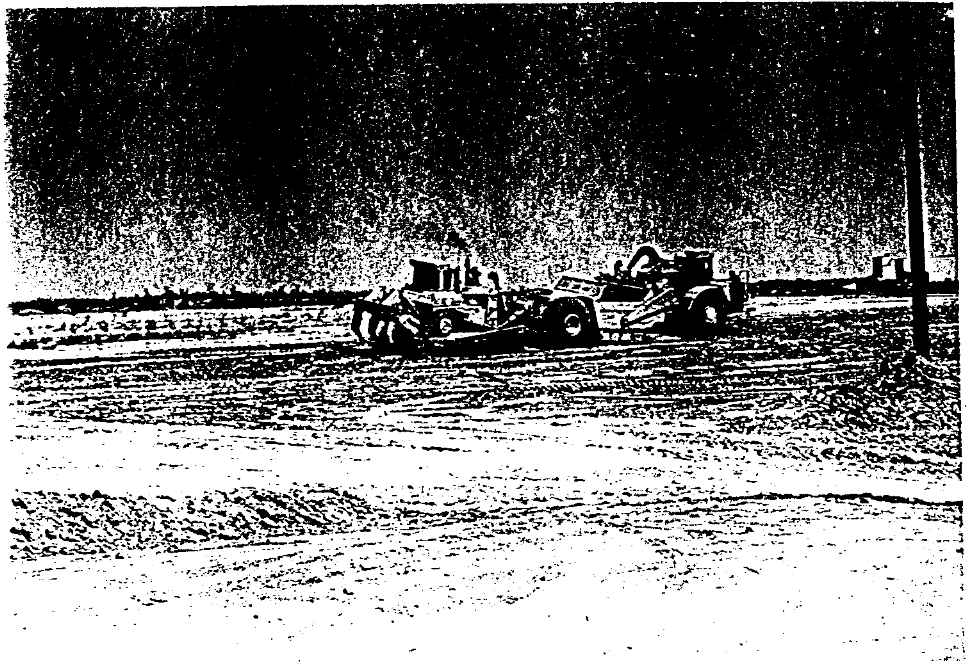


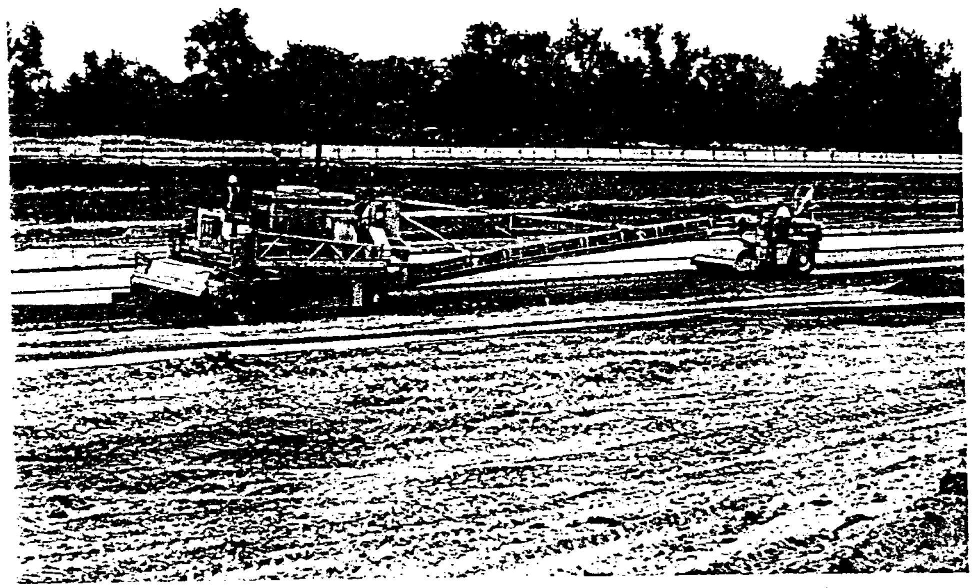


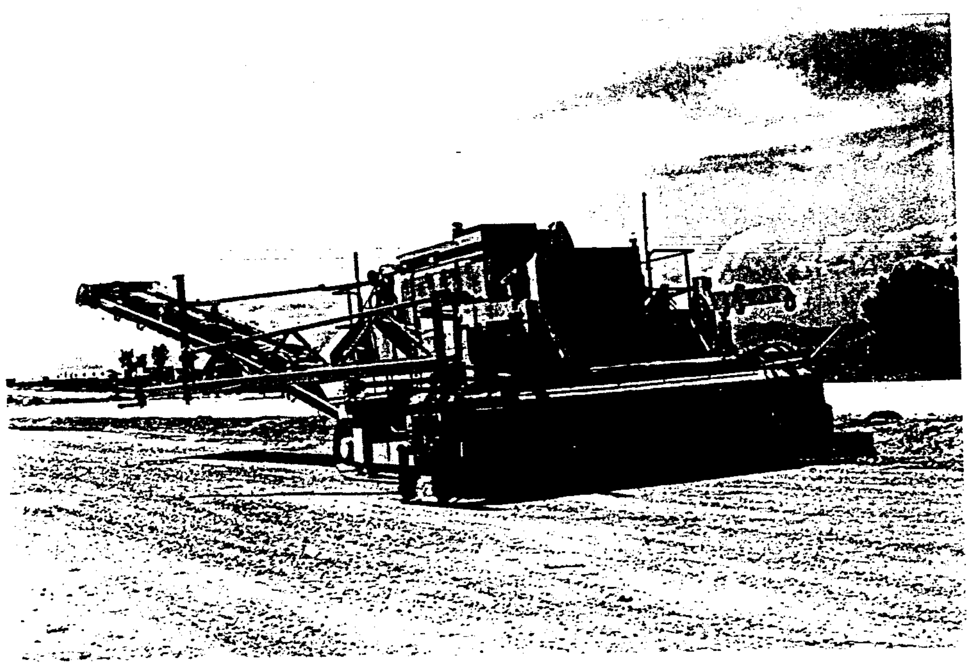


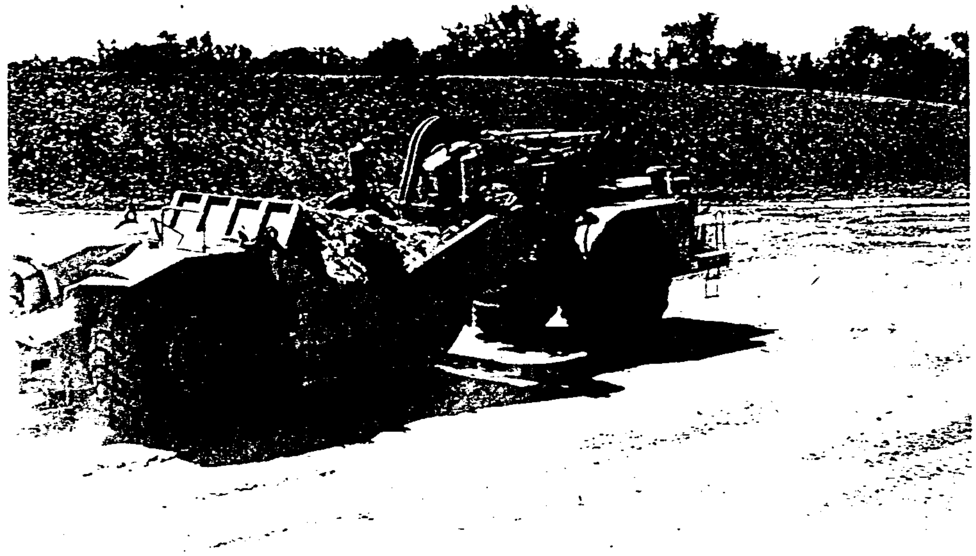


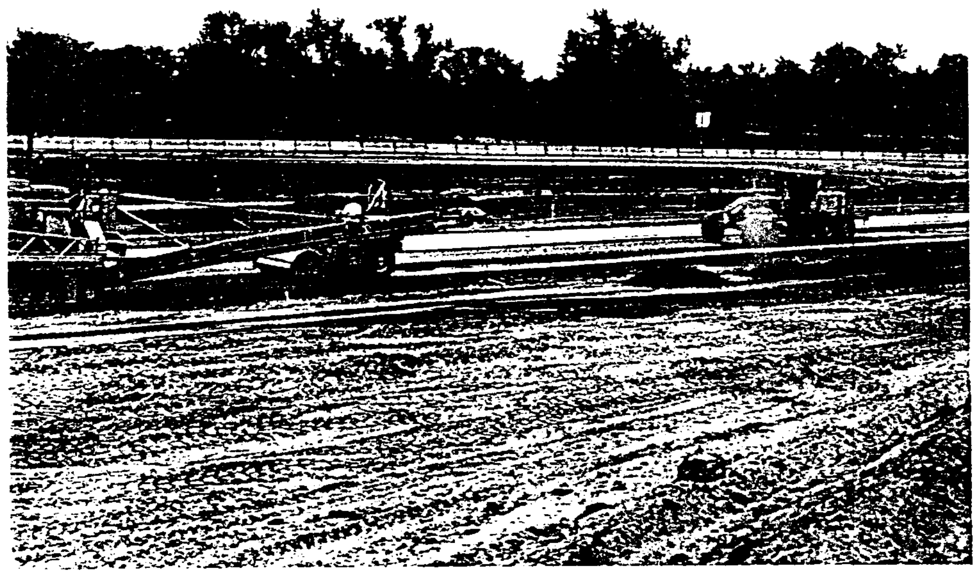

ENERPAC

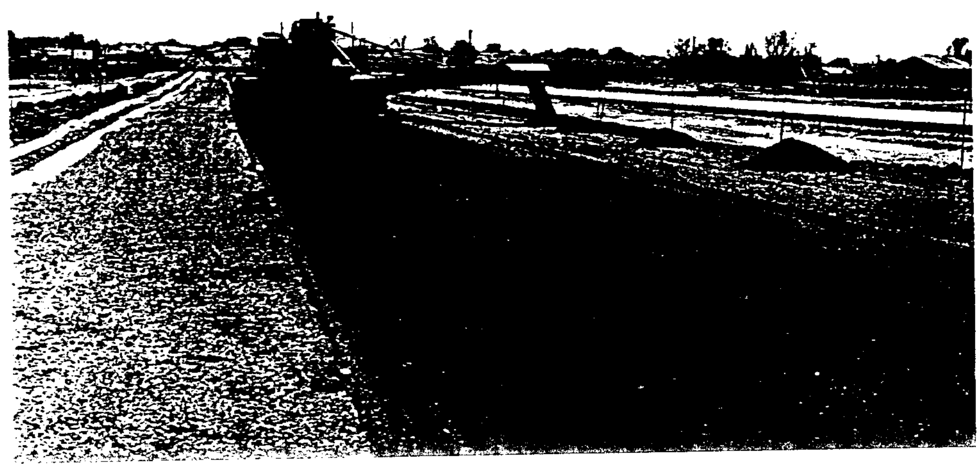


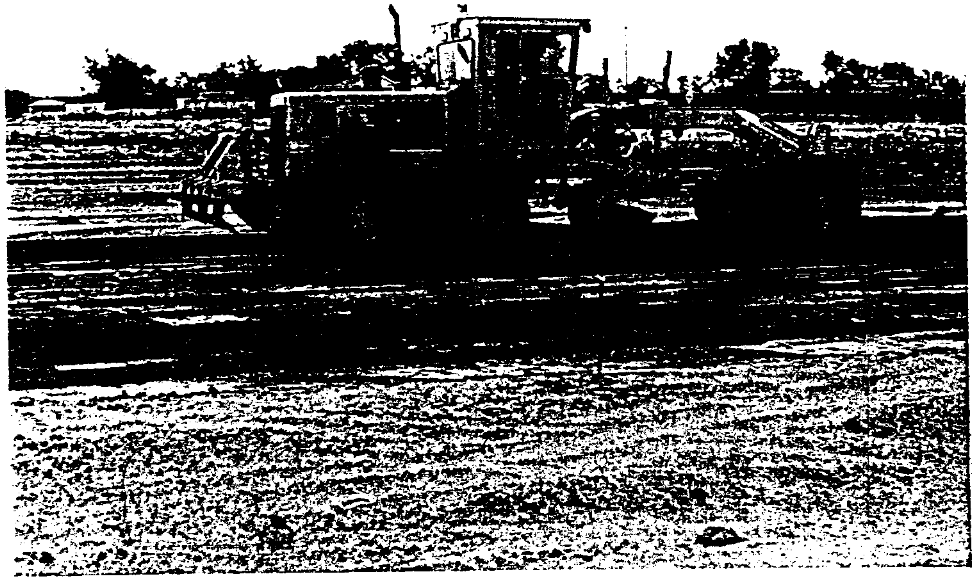












APPENDIX B

MATERIAL PROPERTIES

****************************** SPS LABORATORY TESTING DATA SHEET ******************************

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS: PROJECT LEVEL
LAB DATA SHEET L05

SHEET 1 OF 14

STATE CODE 08
SECTION ID 0 2 0 0

1	2	3	4	5
PROJECT LAYER CODE	*MATERIAL CODE*	*INVENTORY LAYER NUMBER 1*	*INVENTORY LAYER NUMBER 2*	*COMMENTS* (50 characters or less) (Use an extra sheet if necessary)
A	2 1 7	_ 1	_ _	Clayey Sand with Gravel
B	2 1 4	_ 1	_ _	Silty Sand
C	1 1 3	_ 1	_ _	Sandy Clay
D	2 1 0	_ 1	_ _	Well Graded Sand with Silt
E	1 1 4	_ 1	_ _	Sandy Lean Clay
F	3 0 8	_ 2	_ _	Soil-Aggregate Mixture (DGAB)
G	3 2 1	_ 3	_ _	Asphalt Treated Base (ATB)
H	3 3 4	_ 4	_ _	Lean Concrete Base (LCB)
I	_ 0 4	_ 5	_ _	PCC
J	2 1 6	_ 1	_ _	Clayey Sand
K	2 0 4	_ 1	_ _	Poorly Graded Sand with Silt
_	_ _ _	_ _	_ _	
_	_ _ _	_ _	_ _	
_	_ _ _	_ _	_ _	
_	_ _ _	_ _	_ _	
_	_ _ _	_ _	_ _	
_	_ _ _	_ _	_ _	
_	_ _ _	_ _	_ _	
_	_ _ _	_ _	_ _	
_	_ _ _	_ _	_ _	
_	_ _ _	_ _	_ _	

GENERAL
REMARKS: ______

CHECKED AND APPROVED, DATE
V. Henderson ~~6-23-94~~
LTPP REPRESENTATIVE 9-19-94
Affiliation NCE

********** .*********************************** SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - MEASUREMENT DATA
LAB DATA SHEET L05A

SHEET 2 OF 14

STATE CODE 08
SECTION ID 0216
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8	9	10	11	12	13
				BEFORE SECTION			*WITHIN SECTION*			*AFTER SECTION*		
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*
1	K	07	SS	UNK/__ft*	---	8	UNK/__ft*	---	4	UNK/__ft*	204	---
02	F	05	GB		---	8	5.8		5			8
03	I	03	PC	12.0	04	2	11.6	04	5	11.9	04	2

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet; enter depth to refusal in feet if found within 20 feet and cross out "UNK".

GENERAL REMARKS:

CHECKED AND APPROVED, DATE
Norma Henderson 9-19-94
LTPP REPRESENTATIVE
Affiliation NCE

** SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - ANALYSIS
LAB DATA SHEET L05B

SHEET ___ OF ___

STATE CODE 08
SECTION ID 0216
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*COMMENT CODE*	*COMMENT NOTE* (50 characters or less) (Use an extra sheet if necessary)
1	K	07	SS	(UNK/__ __.ft)*	204		
02	F	05	GB	5.8	308	e	material code derived from 080214
03	I	03	PC	11.8	04		

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet at the nearest adjacent probe: enter depth to refusal in feet if found within 20 feet and cross out "UNK".

General Remarks ___

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
SHRP REPRESENTATIVE
Affiliation NCE

********** ************************************ SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - MEASUREMENT DATA
LAB DATA SHEET L05A

SHEET 3 OF 14

STATE CODE 08
SECTION ID 0213
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8	9	10	11	12	13
				BEFORE SECTION			*WITHIN SECTION*			*AFTER SECTION*		
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*
1	K	07	SS	UNK/___ft*		8	UNK/___ft*		4	UNK/___ft*		8
02	F	05	GB			8	5.9		5			8
03	I	03	PC	8.8	04	2	8.7	04	5	8.5	04	2

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet; enter depth to refusal in feet if found within 20 feet and cross out "UNK".

GENERAL REMARKS:

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
LTPP REPRESENTATIVE
Affiliation NCE

** SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - ANALYSIS
LAB DATA SHEET L05B

SHEET ___ OF ___

STATE CODE 08
SECTION ID 0213
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*COMMENT CODE*	*COMMENT NOTE* (50 characters or less) (Use an extra sheet if necessary)
1	K	07	SS	(UNK) __ __ ft)*	204	_ _ ℓ	adjacent 080216 - derived material code
02	F	05	GB	5.9	308	_ _ ℓ	adjacent 080214 - derived material code
03	I	03	PC	8.7	04		
				.			
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				.			

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet at the nearest adjacent probe: enter depth to refusal in feet if found within 20 feet and cross out "UNK".

General Remarks ______

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
SHRP REPRESENTATIVE
Affiliation NCE

********** ************************************ SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - MEASUREMENT DATA
LAB DATA SHEET L05A

SHEET 4 OF 14

STATE CODE 08
SECTION ID 0214
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8	9	10	11	12	13
				BEFORE SECTION			*WITHIN SECTION*			*AFTER SECTION*		
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*
1	A	07	SS	UNK/___ft*		8	UNK/___ft*		8	UNK/___ft*	217	
02	F	05	GB			8	5.9		5		308	
03	I	03	PC	8.3	04	2	8.4	04	5	8.5	04	2

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet; enter depth to refusal in feet if found within 20 feet and cross out "UNK".

GENERAL REMARKS:

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
LTPP REPRESENTATIVE
Affiliation NCE

*** SPS LABORATORY TESTING DATA SHEET ***

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - ANALYSIS
LAB DATA SHEET L05B

SHEET ____ OF ____

STATE CODE 08
SECTION ID 0214
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*COMMENT CODE*	*COMMENT NOTE* (50 characters or less) (Use an extra sheet if necessary)
1	A	07	SS	(UNK/__ __.ft)*	217		
02	F	05	GB	5.9	308		
03	I	03	PC	8.4	04		

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet at the nearest adjacent probe: enter depth to refusal in feet if found within 20 feet and cross out "UNK".

General Remarks ____________________

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
SHRP REPRESENTATIVE
Affiliation NCE

********** ************************************** SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - MEASUREMENT DATA
LAB DATA SHEET L05A

SHEET 5 OF 14

STATE CODE 08
SECTION ID 0215
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8	9	10	11	12	13
				BEFORE SECTION			*WITHIN SECTION*			*AFTER SECTION*		
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*
1	C	07	SS	UNK/___ft*		8	UNK/___ft*		4	UNK/___ft*		8
02	E	05	GB			8	6.0		5			8
03	I	03	PC	11.4	04	2	11.4	04	5	11.5	04	2

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet; enter depth to refusal in feet if found within 20 feet and cross out "UNK".

GENERAL REMARKS:

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
LTPP REPRESENTATIVE
Affiliation NCE

** SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - ANALYSIS
LAB DATA SHEET L05B

SHEET ____ OF ____

STATE CODE 08
SECTION ID 0215
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*COMMENT CODE*	*COMMENT NOTE* (50 characters or less) (Use an extra sheet if necessary)
1	A	07	SS	(UNK)/__ __.ft)*	217	_ | _ | P	adjacent 080214 - derived material code
02	F	05	GB	6.0	308	_ | _ | P	adjacent 080214 - derived material code
03	I	03	PC	11.4	04		

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet at the nearest adjacent probe: enter depth to refusal in feet if found within 20 feet and cross out "UNK".

General Remarks ____________________

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
SHRP REPRESENTATIVE
Affiliation NCE

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - MEASUREMENT DATA
LAB DATA SHEET L05A

SHEET 6 OF 14

STATE CODE 08
SECTION ID 0219
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8	9	10	11	12	13
				BEFORE SECTION			*WITHIN SECTION*			*AFTER SECTION*		
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*
1	A	07	SS	UNK/___ft*	---	8	UNK/___ft*	---	4	UNK/__ft*	217	---
02	H	05	TB	6.0	334	2	6.3	334	5	6.0	334	2
03	I	03	PC	10.5	04	2	11.6	04	5	11.3	04	2

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet; enter depth to refusal in feet if found within 20 feet and cross out "UNK".

GENERAL REMARKS:

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
LTPP REPRESENTATIVE
Affiliation NCE

** SPS LABORATORY TESTING DATA SHEET **

SHEET ____ OF ____

LTPP LABORATORY MATERIAL HANDLING AND TESTING

SUMMARY OF PAVEMENT LAYERS - ANALYSIS

LAB DATA SHEET L05B

STATE CODE 08

SECTION ID 0219

CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*COMMENT CODE*	*COMMENT NOTE* (50 characters or less) (Use an extra sheet if necessary)
1	A	07	SS	UNK/__ __.ft)*	217		
02	#	05	TB	6.1	334		
03	I	03	PC	11.1	04		

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet at the nearest adjacent probe: enter depth to refusal in feet if found within 20 feet and cross out "UNK".

General Remarks ____

CHECKED AND APPROVED, DATE

N. Henderson 9-19-94

SHRP REPRESENTATIVE

Affiliation NCE

********** ************************************ SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - MEASUREMENT DATA
LAB DATA SHEET L05A

SHEET 7 OF 14

STATE CODE 08
SECTION ID 0218
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8	9	10	11	12	13
				BEFORE SECTION			WITHIN SECTION			AFTER SECTION		
LAYER NUMBER	PROJECT LAYER CODE	LAYER DESCRIPT.	LAYER TYPE	LAYER THICKNESS (INCHES)	MATERIAL CODE	MEAS. TYPE	LAYER THICKNESS (INCHES)	MATERIAL CODE	MEAS. TYPE	LAYER THICKNESS (INCHES)	MATERIAL CODE	MEAS. TYPE
1	A	07	SS	UNK/___ft*	_ _ _	_ _ 8	UNK/___ft*	_ _ _	_ _ 8	UNK/__ft*	_ _ _	_ _ 8
02	H	05	TB	_ _ 6 . 1	334	_ _ 2	_ _ 6 . 4	334	_ _ 5	_ _ 6 . 1	334	_ _ 2
03	I	03	PC	_ _ 7 . 9	_ 04	_ _ 2	_ _ 7 . 7	_ 04	_ _ 5	_ _ 7 . 5	_ 04	_ _ 2

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet; enter depth to refusal in feet if found within 20 feet and cross out "UNK".

GENERAL REMARKS: Boring log lost.

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
LTPP REPRESENTATIVE
Affiliation NCE

** SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - ANALYSIS
LAB DATA SHEET L05B

SHEET ____ OF ____

STATE CODE 0 8
SECTION ID 0 2 1 8
CONSTRUCTION NUMBER 0 1

1	2	3	4	5	6	7	8
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*COMMENT CODE*	*COMMENT NOTE* (50 characters or less) (Use an extra sheet if necessary)
1	A	07	S S	UNK/ __ __ (ft)*	2 1 7	_ | 9 | P	adjacent 080219 - derived material code & thickness
0 2	H	0 5	T B	__ __ 6 . 2	3 3 4	_ | _ | _	
0 3	I	0 3	P C	__ __ 7 . 7	_ 0 4	_ | _ | _	

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet at the nearest adjacent probe: enter depth to refusal in feet if found within 20 feet and cross out "UNK".

General Remarks ____________________

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
SHRP REPRESENTATIVE
Affiliation NCE

********** *********************************** SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - MEASUREMENT DATA
LAB DATA SHEET L05A

STATE CODE 08
SECTION ID 0217
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8	9	10	11	12	13
				BEFORE SECTION			*WITHIN SECTION*			*AFTER SECTION*		
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*
1	E	07	SS	UNK/___ft*	___	__8	UNK/___ft*	L14	__4	UNK/__ft*	___	__8
02	H	05	TB	___._	___	__8	__6.7	334	__5	__5.8	334	__2
03	I	03	PC	___._	___	__8	__8.6	_04	__5	__8.6	_04	__2
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet; enter depth to refusal in feet if found within 20 feet and cross out "UNK".

GENERAL REMARKS: No measurements before section due to slab removal & replacement to put in culvert.

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
LTPP REPRESENTATIVE
Affiliation NCE

*** SPS LABORATORY TESTING DATA SHEET ***

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - ANALYSIS
LAB DATA SHEET L05B

SHEET ____ OF ____

STATE CODE 08
SECTION ID 0217
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*COMMENT CODE*	*COMMENT NOTE* (50 characters or less) (Use an extra sheet if necessary)
1	E	07	SS	UNK/__ __.ft)*	114		
02	H	05	TB	6.3	334	4	
03	I	03	PC	8.6	04	u	

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet at the nearest adjacent probe: enter depth to refusal in feet if found within 20 feet and cross out "UNK".

General Remarks ____

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
SHRP REPRESENTATIVE
Affiliation NCE

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - MEASUREMENT DATA
LAB DATA SHEET L05A

SHEET 9 OF 14

STATE CODE 08
SECTION ID 0220
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8	9	10	11	12	13
				BEFORE SECTION			*WITHIN SECTION*			*AFTER SECTION*		
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*
1	E	07	SS	UNK/___ft*	_ _ _	_ _ 8	UNK/___ft*	_ _ _	_ _ 8	UNK/__ft*	_ _ _	_ _ 8
02	H	05	TB	_ _ 6 . 5	334	_ _ 2	_ _ 6 . 3	334	_ _ 5	_ _ 6 . 0	334	_ _ 2
03	I	03	PC	_ 10 . 9	_ 04	_ _ 2	_ 11 . 3	_ 04	_ _ 5	_ 11 . 0	_ 04	_ _ 2
_ _	_	_ _	_ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _
_ _	_	_ _	_ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _
_ _	_	_ _	_ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _
_ _	_	_ _	_ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _
_ _	_	_ _	_ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _
_ _	_	_ _	_ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _
_ _	_	_ _	_ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _
_ _	_	_ _	_ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _
_ _	_	_ _	_ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _
_ _	_	_ _	_ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _
_ _	_	_ _	_ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _
_ _	_	_ _	_ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _
_ _	_	_ _	_ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _
_ _	_	_ _	_ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _	_ _ _ . _	_ _ _	_ _ _

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet; enter depth to refusal in feet if found within 20 feet and cross out "UNK".

GENERAL REMARKS:

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
LTPP REPRESENTATIVE
Affiliation NCE

** SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - ANALYSIS
LAB DATA SHEET L05B

SHEET ____ OF ____

STATE CODE 08
SECTION ID 0220
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*COMMENT CODE*	*COMMENT NOTE* (50 characters or less) (Use an extra sheet if necessary)
1	E	07	SS	UNK ___ . ft)*	114	_ | Q | P	adjacent 080217-derived material code & thickness
02	H	05	TB	6.3	334	_ | _ | _	
03	I	03	PC	11.1	04	_ | _ | _	

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet at the nearest adjacent probe: enter depth to refusal in feet if found within 20 feet and cross out "UNK".

General Remarks ______________________________

CHECKED AND APPROVED, DATE
N Henderson 9-19-94
SHRP REPRESENTATIVE
Affiliation NCE

********** ************************************* SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - MEASUREMENT DATA
LAB DATA SHEET L05A

SHEET 10 OF 14

STATE CODE 08
SECTION ID 0224
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8	9	10	11	12	13
				BEFORE SECTION			*WITHIN SECTION*			*AFTER SECTION*		
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*
1	J	07	SS	UNK/___ft*		8	UNK/___ft*			UNK/__ft*		8
02	F	06	GS			8	3.1		5			8
03	H	05	TB			8	4.6	321	5			8
04	I	03	AC	11.3	04	2	11.3	04	5	12.5	04	2

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet; enter depth to refusal in feet if found within 20 feet and cross out "UNK".

GENERAL REMARKS:

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
LTPP REPRESENTATIVE
Affiliation NCE

** SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - ANALYSIS
LAB DATA SHEET L05B

SHEET____OF____

STATE CODE 0 8
SECTION ID 0 2 2 4
CONSTRUCTION NUMBER 0 1

1	2	3	4	5	6	7	8
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*COMMENT CODE*	*COMMENT NOTE* (50 characters or less) (Use an extra sheet if necessary)
1	J	07	S S	(UNK/__ __.ft)*	2 1 6		
0 2	F	0 6	G S	3 . 1	3 0 8		
0 3	H	0 5	T B	4 . 6	3 2 1		
0 4	I	0 3	P C	1 1 . 7	0 4		

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet at the nearest adjacent probe: enter depth to refusal in feet if found within 20 feet and cross out "UNK".

General Remarks ______

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
SHRP REPRESENTATIVE
Affiliation NCE

********** ** SPS LABORATORY TESTING DATA SHEET ***

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - MEASUREMENT DATA
LAB DATA SHEET L05A

STATE CODE 08
SECTION ID 0221
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8	9	10	11	12	13
				BEFORE SECTION			*WITHIN SECTION*			*AFTER SECTION*		
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*
1	E	07	SS	UNK/___ft*	---	--8	UNK/___ft*	---	--4	UNK/___ft*	114	---
02	F	06	GS	----.-	---	--8	--4.1	---	--5	----.-	308	---
03	G	05	TB	----.-	---	--8	--3.7	321	--5	----.-	---	--8
04	I	03	PC	--7.5	-04	--2	--8.6	-04	--5	--8.8	-04	--2
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet; enter depth to refusal in feet if found within 20 feet and cross out "UNK".

GENERAL REMARKS: ______________________________

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
LTPP REPRESENTATIVE
Affiliation NCE

** SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - ANALYSIS
LAB DATA SHEET L05B

SHEET ___ OF ___

STATE CODE 0 8
SECTION ID 0 2 2 1
CONSTRUCTION NUMBER 0 1

1	2	3	4	5	6	7	8
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*COMMENT CODE*	*COMMENT NOTE* (50 characters or less) (Use an extra sheet if necessary)
1	E	07	S S	(UNK) __ __.__ ft)*	1 1 4		
0 2	F	0 6	G S	4.1	3 0 8		
0 3	G	0 5	T B	3.7	3 2 1		
0 4	I	0 3	P C	8.3	0 4		

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet at the nearest adjacent probe: enter depth to refusal in feet if found within 20 feet and cross out "UNK".

General Remarks ______

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
SHRP REPRESENTATIVE
Affiliation NCE

********** ************************************** SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - MEASUREMENT DATA
LAB DATA SHEET L05A

SHEET 12 OF 14

STATE CODE 08
SECTION ID 0222
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8	9	10	11	12	13
				BEFORE SECTION			*WITHIN SECTION*			*AFTER SECTION*		
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*
1	D	07	SS	UNK/___ft*		8	UNK/___ft*		8	UNK/___ft*		8
02	F	06	GS			8	4.0		5			8
03	G	05	TB			8	4.5	321	5			8
04	I	03	PC	8.5	04	2	8.6	04	5	9.0	04	2

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet; enter depth to refusal in feet if found within 20 feet and cross out "UNK".

GENERAL REMARKS:

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
LTPP REPRESENTATIVE
Affiliation NCE

** SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - ANALYSIS
LAB DATA SHEET L05B

SHEET____OF____

STATE CODE 0 8
SECTION ID 0 2 2 2
CONSTRUCTION NUMBER 0 1

1	2	3	4	5	6	7	8
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*COMMENT CODE*	*COMMENT NOTE* (50 characters or less) (Use an extra sheet if necessary)
1	D	07	S S	(UNK) __ __.(ft)*	1 1 4	_ 19 P	adjacent 080221 - derived material & thickness codes
0 2	F	0 6	G S	__ __ 4 . 0	3 0 8	_ _ P	adjacent 080221 - derived material code
0 3	G	0 5	T B	__ __ 4 . 5	3 2 1		
0 4	I	0 3	P C	__ __ 8 . 7	_ 0 4		

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet at the nearest adjacent probe: enter depth to refusal in feet if found within 20 feet and cross out "UNK".

General Remarks ____________________

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
SHRP REPRESENTATIVE
Affiliation NCE

********** ************************************** SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - MEASUREMENT DATA
LAB DATA SHEET L05A

SHEET 13 OF 14

STATE CODE 08
SECTION ID 0223
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8	9	10	11	12	13
				BEFORE SECTION			*WITHIN SECTION*			*AFTER SECTION*		
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*
1	D	07	SS	UNK/___ft*	---	8	UNK/___ft*	---	4	UNK/___ft*	210	---
02	F	06	GS	----.-	---	8	4.7		5	----.-	---	8
03	G	05	TB	----.-	---	8	4.2	321	5	----.-	---	8
04	I	03	EC	11.8	04	2	11.7	04	5	12.0	04	2
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---
--	-	--	--	----.-	---	---	----.-	---	---	----.-	---	---

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet; enter depth to refusal in feet if found within 20 feet and cross out "UNK".

GENERAL REMARKS:

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
LTPP REPRESENTATIVE
Affiliation NCE

** SPS LABORATORY TESTING DATA SHEET ***

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - ANALYSIS
LAB DATA SHEET L05B

SHEET ___ OF ___

STATE CODE 08
SECTION ID 0223
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*COMMENT CODE*	*COMMENT NOTE* (50 characters or less) (Use an extra sheet if necessary)
1	D	07	SS	UNK __ __.ft)*	210		
02	F	06	GS	4.7	308	P	adjacent 080221- derived material code
03	G	05	TB	4.2	321		
04	H	03	PC	11.8	04		

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet at the nearest adjacent probe: enter depth to refusal in feet if found within 20 feet and cross out "UNK".

General Remarks ______

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
SHRP REPRESENTATIVE
Affiliation NCE

********** ************************************ SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - MEASUREMENT DATA
LAB DATA SHEET L05A

SHEET____OF____

STATE CODE 08
SECTION ID 0239
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8	9	10	11	12	13
				BEFORE SECTION			*WITHIN SECTION*			*AFTER SECTION*		
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*MEAS. TYPE*
1	B	07	SS	UNK/___ft*	___	8	UNK/___ft*	___	4	UNK/___ft*	214	___
02	I	03	PC	12.0	04	2	11.7	04	5	11.4	04	2
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___
__	_	__	__	___._	___	___	___._	___	___	___._	___	___

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet; enter depth to refusal in feet if found within 20 feet and cross out "UNK".

GENERAL REMARKS:____________________

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
LTPP REPRESENTATIVE
Affiliation NCE

** SPS LABORATORY TESTING DATA SHEET **

LTPP LABORATORY MATERIAL HANDLING AND TESTING
SUMMARY OF PAVEMENT LAYERS - ANALYSIS
LAB DATA SHEET L05B

SHEET____ OF____

STATE CODE 08
SECTION ID 0259
CONSTRUCTION NUMBER 01

1	2	3	4	5	6	7	8
LAYER NUMBER	*PROJECT LAYER CODE*	*LAYER DESCRIPT.*	*LAYER TYPE*	*LAYER THICKNESS (INCHES)*	*MATERIAL CODE*	*COMMENT CODE*	*COMMENT NOTE* (50 characters or less) (Use an extra sheet if necessary)
1	B	07	SS	(UNK) __ __ . ft)*	214		
02	I	03	PC	11.7	04		

* See the shoulder auger probe logs (Form S05); circle "UNK" if no refusal was found within 20 feet at the nearest adjacent probe: enter depth to refusal in feet if found within 20 feet and cross out "UNK".

General Remarks

CHECKED AND APPROVED, DATE
N. Henderson 9-19-94
SHRP REPRESENTATIVE
Affiliation NCE

March 8, 1993
(Corrected March 29, 1993)

Castle Rock Construction
P.O. Box 1148
Castle Rock, CO 80104-1148

Attention: Ralph Bell

Subject: Trial Mix Study
CDOT Class P Mix
Job No. 7774

Dear Sir:

This report presents results of a trial mix study to determine compressive strengths for two CDOT Class P mixes.

Aggregates

Frei No. 467 and No. 57 coarse aggregate and Frei sand were used in this study. Tests were conducted to determine compliance with gradation requirements and to define properties needed for trial mix preparation. The physical properties of the aggregates are presented in Table No. 1. The aggregates submitted meet CDOT specifications for the properties tested.

Concrete Mix Criteria

One concrete mix was proportioned with size No. 467 aggregate in general conformance with ACI 211, and your instructions, to meet CDOT requirements. A similar mix was prepared with only size No. 57 coarse aggregate. The mixes were prepared and specimens cast in accordance with AASHTO T 126. The following criteria and materials were used in the mixes.

Cement Content (lbs):	565
Fly Ash (lbs.)	113
Slump (inches):	1-1/2 - 2-1/2 in.
Air Content, (%):	5 to 7

Materials:

Cement:	Southwestern Type I/II
Fly Ash:	Pozzolanic Class F (Bridger)
Coarse Aggregate:	Frei Pit 1
Sand:	Frei Pit 7
Admixture:	Conchem 50 and Pave-Air (Master Builders)

Trial Mix Proportions and Physical Properties

Mix proportions and fresh concrete properties are presented in Table Nos. 2 and 3. The compressive strengths are also presented. The mix presented in Table No. 2 meets CDOT requirements for a Class P mix, and the mix presented in Table 3 meets CDOT requirements for a Class P mix with a size No. 57 aggregate substituted for size No. 467.

If you have any questions regarding this report, or if we can be of further service, please feel free to contact us.

Very truly yours,

COMMERCIAL TESTING LABORATORIES

Orville R. Werner II, P.E.,
Senior Engineer

ORW/nd

Enclosures

22 LIPAN STREET DENVER, COLORADO 80223 303 / 825-3207

TABLE NO. 1

PHYSICAL PROPERTIES OF AGGREGATES

Client: Castle Rock Construction
Job No.: 7774
Aggregates: Coarse - Frei (Pit No. 1)
Fine - Frei (Pit No. 7)

AASHTO T 27, Sieve Analysis of Fine and Coarse Aggregate

Sieve Size	Size #57 Sample % Pass	Size #4 Sample % Pass	55/45 Blend #57/#4 % Pass	CDOT 703 Specs % Pass #57	CDOT 703 Specs % Pass #467	Sand Sample % Pass	CDOT 703 Specs. % Pass
2 in.		100	100		100		
1-1/2 in.	100	96	98	100	95-100		
1 in.	99	57	80	95-100	-		
3/4 in.	87	18	56	-	35-70		
1/2 in.	55	1	31	25-60	-		
3/8 in.	39	1	22	-	10-30		100
No. 4	8	0.5	5	0-10	0-5	100	95-100
No. 8	4	-	3	0-5	-	97	-
No. 16						78	45-80
No. 30						44	-
No. 50						17	10-30
No. 100						3	2-10
AASHTO T 11, Material Finer Than No. 200 Sieve, (%):	0.5	0.3	0.4	1.0 Max		0.6	3.0 Max.

AASHTO T 96, Resistance to Abrasion of Small Size Coarse Aggregate by Use of the Los Angeles Machine

Sample I.D.	Grading	% Loss
Coarse Aggregate	#57 (B)	37.1
	#4 (3)	39.9

AASHTO T 176, Sand Equivalent Test Modified for CDOT

Sand Avg. S.E. = 98.3

TABLE NO. 2

Client:	Castle Rock Construction
Aggregates:	Coarse Aggregate - Frei No. 467 Blend (Pit No. 1)
	Fine Aggregate - Frei (Pit No. 7)
Cement:	Southwest Type I/II
Fly Ash:	Pozzolanic Class F (Bridger)
Admixtures:	Master Builders

CONCRETE MIX PROPORTIONS

Identification No.: A-1308 Date Made: February 3, 1993

MIX PROPORTIONS (Per 1.01 Cubic Yard of Concrete)

Cement	565	lbs
Fly Ash	113	lbs
WRA (Conchem 50 @ 2.5 ozs/cwt)	17.0	ozs
AEA (Pave-Air)	5.6	ozs
Sand	1210	lbs
Coarse Aggregate (No. 57)	970	lbs
Coarse Aggregate (No. 4)	800	lbs
Water	243	lbs (29.2 gals)

In the above proportions, aggregate weights are for aggregate in the saturated, surface dry condition. Corrections must be made for aggregates that vary from these moisture conditions.

PHYSICAL PROPERTIES OF CONCRETE

Unit Wt. of Mixed Concrete, (AASHTO T 121) pcf:	144.8
Slump, (AASHTO T 119) in.:	1-1/2
Air Content, (AASHTO T 152, (Pressure Method), %:	5.1
Water/Cementitious Ratio, (lb/lb):	0.36
Temperature, (ASTM C 1064), ^{o}F:	67

COMPRESSIVE STRENGTH OF TEST CYLINDERS (AASHTO T 22), psi

	24 Hr.	3-Day	7-Day	28-Day
				5840
	2400	4040	5070	5930
	1950	4110	5100	5840
Avg:	2175	4075	5085	5870

COMMERCIAL TESTING LABORATORIES

Orville R. Werner II, P.E.

COLORADO REGISTERED PROFESSIONAL ENGINEER ORVILLE R. WERNER II 19540

6-15-93

TABLE NO. 3

Client:	Castle Rock Construction
Aggregates:	Coarse Aggregate - Frei No. 57 Blend (Pit No. 1)
	Fine Aggregate - Frei (Pit No. 7)
Cement:	Southwest Type I/II
Fly Ash:	Pozzolanic Class F (Bridger)
Admixtures:	Master Builders

CONCRETE MIX PROPORTIONS

Identification No.: A-1307 Date Made: February 3, 1993

MIX PROPORTIONS (Per 1.01 Cubic Yard of Concrete)

Cement	565	lbs
Fly Ash	113	lbs
WRA (Conchem 50 @ 2.5 ozs/cwt)	17.0	ozs
AEA (Pave-Air)	5.6	ozs
Sand	1200	lbs
Coarse Aggregate (No. 57)	1730	lbs
Water	247	lbs (29.7 gals)

In the above proportions, aggregate weights are for aggregate in the saturated, surface dry condition. Corrections must be made for aggregates that vary from these moisture conditions.

PHYSICAL PROPERTIES OF CONCRETE

Unit Wt. of Mixed Concrete, (AASHTO T 121) pcf:	142.2
Slump, (AASHTO T 119) in.:	1-1/2
Air Content, (AASHTO T 152, (Pressure Method), %:	6.2
Water/Cementitious Ratio, (lb/lb):	0.36
Temperature, (ASTM C 1064), ^{o}F:	65

COMPRESSIVE STRENGTH OF TEST CYLINDERS (AASHTO T 22), psi

	24 Hr.	3-Day	7-Day	28-Day
				6300
	1770	3700	5030	6180
	1930	3840	5040	6470
Avg:	1850	3770	5035	6315

COMMERCIAL TESTING LABORATORIES

Orville R. Werner II, P.E.

6-15-1993

REGISTERED PROFESSIONAL ENGINEER ORVILLE R. WERNER II

COMMERCIAL TESTING LABORATORIES

A DIVISION OF CTL/THOMPSON, INC.

June 16, 1993

Castle Rock Construction
P.O. Box 1148
Castle Rock, CO 80104-1148

Attention: Mr. Ralph Bell

Subject: Concrete Trial Mix Study
SHRP Mix, 550 psi Flexural Strength
Colorado Project 076-1 (138)
Job No. 7738

Dear Mr. Bell:

After many trial mixes to establish proportions for a 550 psi flexural strength mix we have made three mixes at the same proportions, and have achieved results which we believe meet the specified requirements. The results of these mixes are presented in Table No. 1 attached. Table No. 2 summarizes the results and compares them to specified requirements, and Table No. 3 presents the properties of concrete aggregates.

We found that, in general, slump and air contents must be closely regulated to achieve 550 psi flexural strength. This mix with less than 6% air content may achieve strength appreciably in excess of 550 psi. Moreover, to achieve durability in this relatively lean mix, air content should be in the upper part of the specified range. Therefore, we recommend that the air contents on site be controlled as nearly as possible between 6% and 7%.

If you have any questions regarding this mix, or our results, please call.

Very truly yours,

COMMERCIAL TESTING LABORATORIES

Orville R. Werner II, P.E.
Principal Engineer

ORW/nd
Enclosures

22 LIPAN STREET DENVER, COLORADO 80223 303 / 825-3207

TABLE NO. 1

SHARP TRIAL MIXES
550 PSI FLEXURAL STRENGTH

Mix I.D.		A-3136	A-3137	A-3138
Date Made:		5-27-93	5-27-93	5-27-93
Cement Content (lbs/yd^3)		398	398	402
Fly Ash Content (lbs/yd^3)		100	99	100
AEA Content (ozs/yd^3)		7.1	6.3	5.6
WRA Content (ozs/yd^3)		0	0	0
Sand Content (lbs/yd^3)		1431	1413	1445
Rock Content (lbs/yd^3)		1722	1709	1730
Water Content (lbs/yd^3)		234	239	236
W/C+P Ratio		0.47	0.48	0.47
Air Content (%)		6.5	7.0	5.8
Slump (in)		2.0	1-3/4	1-1/4
Density (lbs/ft^3)		143.0	142.4	144.4
Flexural Strength:				
7-days		490	550	530
		520	510	525
	Average:	505	530	525
14-days		540	520	590
		570	570	550
		560	570	620
	Average:	560	570	585

TABLE NO. 2

SHRP "550" MIX SUMMARY

Average Proportions/Properties

Cement	399	lbs/yd^3
Fly Ash	100	lbs/yd^3
AEA	6.3	ozs/yd^3
Sand	1430	lbs/yd^3
Rock	1720	lbs/yd^3
Water	236	lbs/yd^3
Slump	1-3/4	inches
Air Content	6.4%	
WC+P Ratio	0.47	
Density	143.3	pcf
Flexural Strength:		
7 Days	520	psi
14 Days	572	psi

3750 - 4200

Portland Cement	- Southwestern Type I/II Low Alkali
Fly Ash	- Pozzolanic Bridger Class F
AEA	- Conchem Pave-Air
Sand	- Frei, Pit No. 7 (Platte River)
Rock	- Frei, #57, Pit 6 (Clear Creek Quarry)

Required average 14-day flexural strength - 525 to 575 psi
Allowable variation of average strength - 165 psi max.
Cumulative variation of average strength - 25 psi actual

TABLE NO. 3

PHYSICAL PROPERTIES OF AGGREGATES

Client: Castle Rock Construction
Job No.: 7738
Aggregates: Coarse - Frei, Pit 6
Fine - Frei, Pit 7

AASHTO T 27, Site Analysis of Fine and Coarse Aggregate

Sieve Size	Size #57 Sample % Pass	CDOT 703 Specs % Pass #57	Sand Sample % Pass	CDOT 703 Specs. % Pass
2"				
1-1/2"	199	100		
1"	99	95-100		
3/4"	87	-		
1/2"	55	25-60		
3/8"	39	-		100
No. 4	8	0-10	100	95-100
No. 8	4	0-5	97	-
No. 16			78	45-80
No. 30			44	-
No. 50			17	10-30
No. 100			3	2-10
AASHTO T 11, Material Finer than No. 200, Sieve, (%):	0.5	1.0 Max.	0.6	3.0 Max.

AASHTO T 96, Resistance to Abrasion of Small Size Coarse Aggregate by Use of the Los Angeles Machine.

Sample I.D.	Grading	% Loss
Coarse Aggregate	#57 (B)	32.0

AASHTO T 176, Sand Equivalent Test Modified for CDOT

Sand Avg. S.E. = 98.3

4

AASHTO T 84/T85, Specific Gravity and Absorption

Sample I.D.	Specific Gr.	Absorption, (%)
Sand	2.60	1.0
Coarse Aggregate	2.73	1.1

TABLE NO. 1

Summary of Trial Mixes
SHRP "550" Mix

Mix I.D.	Date	Cement (lbs)	Fly Ash (lbs)	Rock (lbs)	Air (%)	Slump (in)	W/C	14-Day Flex.
1746	3-17	371	93	1700	6.4	1-3/4	0.50	500
1747	3-17	297	79	1700	6.2	1	0.60	420
1748	3-17	481	120	1720	6.0	1-3/4	0.42	565
1880	3-25	401	100	1720	6.0	1-1/2	0.46	590
1932	3-31	467	117	1730	5.5	1-3/4	0.40	635
1944	4-1	467	117	1730	5.9	1-1/2	0.40	635
1962	4-2	464	116	1720	6.8	1-1/2	0.41	610
2281	5-7	422	106	1720	6.1	2	0.45	525
2282	5-7	427	107	1740	5.3	1 1/2	0.45	626
2283	5-7	422	108	1720	6.2	1 3/4	0.45	620
3136	5-27	398	100	1720	6.5	2	0.47	560
3137	5-27	398	99	1710	7.0	1 3/4	0.48	570
3138	5-27	402	100	1730	5.8	1 1/4	0.47	585

Job No. 7738
Date: April 27, 1993

22 LIPAN STREET DENVER, COLORADO 80223 303 / 25-3207

COMMERCIAL TESTING LABORATORIES

A DIVISION OF CTL/THOMPSON, INC.

June 14, 1993

Castle Rock Construction
P.O. Box 1148
Castle Rock, CO 80104-1148

Attention: Mr. Ralph Bell

Subject: Concrete Trial Mix Study
SHRP Mix, 900 psi Flexural Strength
Colorado Project 076-1 (138)
Job No. 7738

Dear Mr. Bell:

After many trial mixes to establish proportions for a 900 psi flexural strength mix we have made three mixes at the same proportions, and have achieved results which we believe meet the specified requirements. The results of these mixes are presented in Table No. 1 attached. Table No. 2 summarizes the results and compares them to specified requirements, and Table No. 3 presents the properties of concrete aggregates.

We found that, in general, slump and air contents must be closely regulated to achieve 900 psi flexural strength. Moreover, it appears that clean aggregate is critical in this mix. We were unable to consistently achieve the required strength with slumps in excess of 1-1/2 inches and air contents in excess of 6 percent. Therefore, you should probably limit these properties in the concrete supplied for 900 psi (flexural strength) concrete.

If you have any questions regarding this mix, or our results, please call.

Very truly yours,

COMMERCIAL TESTING LABORATORIES

Orville R. Werner II, P.E.
Principal Engineer

ORW/nd

22 LIPAN STREET DENVER, COLORADO 80223 303 / 825-3207

TABLE NO. 1

SHARP TRIAL MIXES
900 PSI FLEXURAL STRENGTH

Mix I.D.		A-2205	A-2655	A-2654
Date Made:		4-6-93	5-7-93	5-7-93
Cement Content (lbs/yd^3)		750	753	744
Fly Ash Content (lbs/yd^3)		150	150	149
AEA Content (ozs//yd^3)		3.5	3	3
WRA Content (ozs/yd^3)		36	37	35
Sand Content (lbs/yd^3)		940	930	930
Rock Content (lbs/yd^3)		1860	1868	1869
Water Content (lbs/yd^3)		251	261	260
W/C+P Ratio		028	0.29	0.29
Air Content (%)		6.2	5.5	5.3
Slump (in)		1-3/4	1-1/2	1-1/2
Density (lbs/ft^3)		145.8	146.3	147.0
Flexural Strength:				
7-days		870	825	810
		880	855	820
	Average:	875	840	815
14-days		920	900	845
		820	950	955
		880	910	920
	Average:	880	910	920

22 LIPAN STREET DENVER, COLORADO 80223 303 / 825-3207

TABLE NO. 2

SHRP "900" MIX SUMMARY

<u>Average Proportions/Properties</u>

Cement	749 lbs/yd^3
Fly Ash	150 lbs/yd^3
AEA	3 ozs/yd^3
WRA	36 ozs/yd^3
Sand	935 lbs/yd^3
Rock	1865 lbs/yd^3
Water	257 lbs/yd^3
Slump	1-1/2 inches
Air Content	5.7%
WC+P Ratio	0.29
Density	146.4 pcf
Flexural Strength:	
7 Days	845 psi
14 Days	905 psi

Portland Cement	- Southwestern Type I/II Low Alkali
Fly Ash	- Pozzolanic Bridger Class F
AEA	- Conchem Pave-Air
WRA	- Conchem 50 (4 ozs per cwt)
Sand	- Frei, Pit No. 7 (Platte River)
Rock	- Frei, #57, Pit 6 (Clear Creek Quarry)

Required average 14-day flexural strength - 860 to 940 psi
Available variation of average strength - 250 psi max.
Cumulative variation of average strength - 45 psi actual

TABLE NO. 3

PHYSICAL PROPERTIES OF AGGREGATES

Client: Castle Rock Construction
Job No.: 7738
Aggregates: Coarse - Frei
Fine - Frei

AASHTO T 27, Site Analysis of Fine and Coarse Aggregate

Sieve Size	Size #57 Sample % Pass	CDOT 73 Specs % Pass #57	Sand Sample % Pass	CDOT 703 Specs. % Pass
2"				
1-1/2"	199	100		
1"	99	95-100		
3/4"	87	-		
1/2"	55	25-60		
3/8"	39	-		100
No. 4	8	0-10	100	95-100
No. 8	4	0-5	97	-
No. 16			78	45-80
No. 30			44	-
No. 50			17	10-30
No. 100			3	2-10
AASHTO T 11, Material Finer than No. 200, Sieve, (%):	0.5	1.0 Max.	0.6	3.0 Max.

AASHTO T 96, Resistance to Abrasion of Small Size Coarse Aggregate by Use of the Los Angeles Machine.

Sample I.D.	Grading	% Loss
Coarse Aggregate	#57 (B)	32.0

AASHTO T 176, Sand Equivalent Test Modified for CDOT

Sand Avg. S.E. = 98.3

AASHTO T 84/T85, Specific Gravity and Absorption

Sample I.D.	Specific Gr.	Absorption, (%)
Sand	2.60	1.0
Coarse Aggregate	2.73	1.1

TABLE NO. 2

Summary of Trial Mixes
SHRP "900" Mix

Mix I.D.	Date	Cement (lbs)	Fly Ash (lbs)	Rock (lbs)	Air (%)	Slump (in)	W/C	14-Day Flex.
1612	3-9	649	98	1820	6.5	2	0.32	750
1645	3-9	750	99	1780	6.9	2	0.30	790
1646	3-9	555	99	1880	6.4	1-1/2	0.36	680
1656	3-9	750	99	1780	6.8	2	0.30	775
1665	3-10	680	140	1900	4.8	1	0.30	925
1791	3-22	558	112	1930	5.5	1-3/4	0.34	730
1792	3-22	659	132	1930	5.5	2	0.31	835
1793	3-22	764	153	1940	4.8	2	0.29	905
1860	3-26	714	143	1890	5.0	1-1/2	0.29	*1010
1861	3-26	705	141	1910	5.5	1-1/2	0.29	840
1862	3-26	730	101	1880	5.3	1-1/2	0.30	880
1989	4-5	750	150	1860	6.0	1-1/2	0.28	865
2005	4-6	750	150	1860	6.2	1-3/4	0.28	880
2024	4-7	751	150	1860	5.7	2	0.29	*820
2654	5-7	744	149	1870	5.3	1 1/2	0.29	920
2655	5-7	753	150	1870	5.5	1 1/2	0.29	910

Ave. 87
Var. = 14

Job No. ~~7738~~
Date: ~~April 27, 1993~~

22 LIPAN STREET DENVER, COLORADO 0223 303 / 825-3207

COMMERCIAL TESTING LABORATORIES

A DIVISION OF CTL/THOMPSON, INC.

June 14, 1993

Castle Rock Construction
P.O. Box 1148
Castle Rock, CO 80104-1148

Attention: Ralph Bell

Subject: Trial Mix Study
CDOT Lean Concrete
Base Trial Mix Study
Job No. 7774 A

Dear Sir:

This report presents results of a trial mix study to determine compressive strengths for a lean concrete base mix meeting the requirements of SHRP/CDOT Project No. ID - I (CX) 076-1 (138).

Aggregates

Frei No. 57 coarse aggregate and Frei sand were used in this study. Tests were conducted to determine compliance with gradation requirements and to define properties needed for trial mix preparation. The physical properties of the aggregates are presented in Table No. 1. The aggregates submitted meet CDOT specifications for the properties tested.

Concrete Mix Criteria

Three concrete mixes with incremental proportions of cement and fly ash were proportioned in general conformance with ACI 211, and your instructions, to meet project requirements. The mixes were prepared and specimens cast in accordance with AASHTO T 126. The following criteria and materials were used in the mixes.

Cement Content (lbs):	115 to 231
Fly Ash (lbs.)	35 to 69
Slump (inches):	3 to 4
Air Content, (%):	7 to 9

Materials:

Cement:	Southwestern Type I/II
Fly Ash:	Pozzolanic Class F (Bridger)
Coarse Aggregate:	Frei Pit 1
Sand:	Frei Pit 7
Admixture:	Pave-Air (Master Builders)

22 LIPAN STREET DENVER, COLORADO 80223 303 / 825-3207

Trial Mix Proportions and Physical Properties

Mix proportions and fresh concrete properties are presented in Table Nos. 2, 3, and 4. The compressive strengths are also presented. A recommended mix meeting 7-day project strength requirements (500 to 750 psi) is presented in Table No. 5. A graphical representation of cement/fly ash content versus strength is presented in Figure No. 1. This graph indicates that a mix with 243 to 295 lbs/yd^3 of cement plus fly ash would meet project strength requirements at age 7 days. The recommended mix (Table No. 5) should yield approximately 600 psi at age 7 days.

If you have any questions regarding this report, or if we can be of further service, please feel free to contact us.

Very truly yours,

COMMERCIAL TESTING LABORATORIES

Orville R. Werner

6-15-93

14540

PROFESSIONAL ENGINEER

Orville R. Werner II, P.E.,
Senior Engineer

ORW/nd

Enclosures

TABLE NO. 1

PHYSICAL PROPERTIES OF AGGREGATES

Client: Castle Rock Construction
Job No.: 7774 A
Aggregates: Coarse - Frei (Pit No. 1)
Fine - Frei (Pit No. 7)

AASHTO T 27, Sieve Analysis of Fine and Coarse Aggregate

Sieve Size	Size #57 Sample % Pass	CDOT 703 Specs. % Pass # 57	Sand Sample % Pass	CDOT 703 Specs. % Pass
2 in.				
1-1/2 in.	100	100		
1 in.	99	95-100		
3/4 in.	87	-		
1/2 in.	55	25-60		
3/8 in.	39	-		100
No. 4	8	0-10	100	95-100
No. 8	4	0-5	97	-
No. 16			78	45-80
No. 30			44	-
No. 50			17	10-30
No. 100			3	2-10
AASHTO T 11, Material Finer Than No. 200 Sieve, (%):	0.5	1.0 Max.	0.6	3.0 Max.

AASHTO T 96, Resistance to Abrasion of Small Size Coarse Aggregate by Use of the Los Angeles Machine

Sample I.D.	Grading	% Loss
Coarse Aggregate	#57 (B)	37.1

AASHTO T 176, Sand Equivalent Test Modified for CDOT

Sand Avg. S.E. = 98.3

TABLE NO. 2

Client:	Castle Rock Construction
Aggregates:	Coarse Aggregate - Frei No. 57, Pit 1
	Fine Aggregate - Frei, Pit 7
Cement:	Southwest Type I/II
Fly Ash:	Pozzolanic Class F (Bridger)
Admixtures:	Master Builders

CONCRETE MIX PROPORTIONS

Identification No.: A-1965/1994 Date Made: April 6, 1993

MIX PROPORTIONS (Per 1.01 Cubic Yard of Concrete)

Cement	112	lbs
Fly Ash	34	lbs
AEA (Pave-Air)	2.5	ozs
Sand	1610	lbs
Coarse Aggregate (No. 57)	1600	lbs
Water	271	lbs (32.5 gals)

In the above proportions, aggregate weights are for aggregate in the saturated, surface dry condition. Corrections must be made for aggregates that vary from these moisture conditions.

PHYSICAL PROPERTIES OF CONCRETE

Unit Wt. of Mixed Concrete, (AASHTO T 121) pcf:	134.5
Slump, (AASHTO T 119) in.:	3-1/4
Air Content, (AASHTO T 152, (Pressure Method), %:	9.0
Water/Cementitious Ratio, (lb/lb):	1.86
Temperature, (ASTM C 1064), ^{o}F:	69

COMPRESSIVE STRENGTH OF TEST CYLINDERS (AASHTO T 22), psi

	3-Day	7-Day
		200
	90	160
	90	190
Average:	90	185

COMMERCIAL TESTING LABORATORIES

Orville R. Werner II, P.E.

6-15-93

TABLE NO. 3

Client:	Castle Rock Construction
Aggregates:	Coarse Aggregate - Frei No. 57, Pit 1
	Fine Aggregate - Frei, Pit 7
Cement:	Southwest Type I/II
Fly Ash:	Pozzolanic Class F (Bridger)
Admixtures:	Master Builders

CONCRETE MIX PROPORTIONS

Identification No.: A-1995 Date Made: April 6, 1993

MIX PROPORTIONS (Per 1.01 Cubic Yard of Concrete)

Cement	170	lbs
Fly Ash	51	lbs
AEA (Pave-Air)	3.5	ozs
Sand	1570	lbs
Coarse Aggregate (No. 57)	1600	lbs
Water	255	lbs (30.6 gals)

In the above proportions, aggregate weights are for aggregate in the saturated, surface dry condition. Corrections must be made for aggregates that vary from these moisture conditions.

PHYSICAL PROPERTIES OF CONCRETE

Unit Wt. of Mixed Concrete, (AASHTO T 121) pcf:	135.0
Slump, (AASHTO T 119) in.:	3
Air Content, (AASHTO T 152, (Pressure Method), %:	9.0
Water/Cementitious Ratio, (lb/lb):	1.15
Temperature, (ASTM C 1064), ^{O}F:	72

COMPRESSIVE STRENGTH OF TEST CYLINDERS (AASHTO T 22), psi

	3-Day	7-Day
		370
	270	410
	280	440
Average:	275	405

COMMERCIAL TESTING LABORATORIES

Orville R. Werner II, P.E. 6-25-93

TABLE NO. 4

Client:	Castle Rock Construction
Aggregates:	Coarse Aggregate - Frei No. 57, Pit 1
	Fine Aggregate - Frei, Pit 7
Cement:	Southwest Type I/II
Fly Ash:	Pozzolanic Class F (Bridger)
Admixtures:	Master Builders

CONCRETE MIX PROPORTIONS

Identification No.: A-1996/1966 Date Made: April 6, 1993

MIX PROPORTIONS (Per 1.01 Cubic Yard of Concrete)

Cement	231	lbs	
Fly Ash	69	lbs	
AEA (Pave-Air)	3.3	ozs	
Sand	1530	lbs	
Coarse Aggregate (No. 57)	1600	lbs	
Water	256	lbs	(30.7 gals)

In the above proportions, aggregate weights are for aggregate in the saturated, surface dry condition. Corrections must be made for aggregates that vary from these moisture conditions.

PHYSICAL PROPERTIES OF CONCRETE

Unit Wt. of Mixed Concrete, (AASHTO T 121) pcf:	136.8
Slump, (AASHTO T 119) in.:	3
Air Content, (AASHTO T 152, (Pressure Method), %:	8.9
Water/Cementitious Ratio, (lb/lb):	0.85
Temperature, (ASTM C 1064), ^{o}F:	73

COMPRESSIVE STRENGTH OF TEST CYLINDERS (AASHTO T 22), psi

	3-Day	7-Day
		750
	560	770
	570	800
Average:	565	775

COMMERCIAL TESTING LABORATORIES

Orville R. Werner II, P.E. 6-15-93

TABLE NO. 5

Client:	Castle Rock Construction
Aggregates:	Coarse Aggregate - Frei No. 57, Pit 1
	Fine Aggregate - Frei, Pit 7
Cement:	Southwest Type I/II
Fly Ash:	Pozzolanic Class F (Bridger)
Admixtures:	Master Builders

CONCRETE MIX PROPORTIONS (Calculated from Trial Mixes)

Identification No.: A-1995 M

RECOMMENDED MIX PROPORTIONS (Per 1.01 Cubic Yard of Concrete)

Cement	204	lbs	
Fly Ash	61	lbs	
AEA (Pave-Air)	As Needed		
Sand	1550	lbs	
Coarse Aggregate (No. 57)	1600	lbs	
Water	255	lbs	(30.6 gals)

In the above proportions, aggregate weights are for aggregate in the saturated, surface dry condition. Corrections must be made for aggregates that vary from these moisture conditions.

ESTIMATED PHYSICAL PROPERTIES OF CONCRETE

Unit Wt. of Mixed Concrete, (AASHTO T 121) pcf:	135-138
Slump, (AASHTO T 119) in.:	3-4
Air Content, (AASHTO T 152, (Pressure Method), %:	7-9
Water/Cementitious Ratio, (lb/lb):	0.96

ANTICIPATED COMPRESSIVE STRENGTH OF TEST CYLINDERS (AASHTO T 22), psi

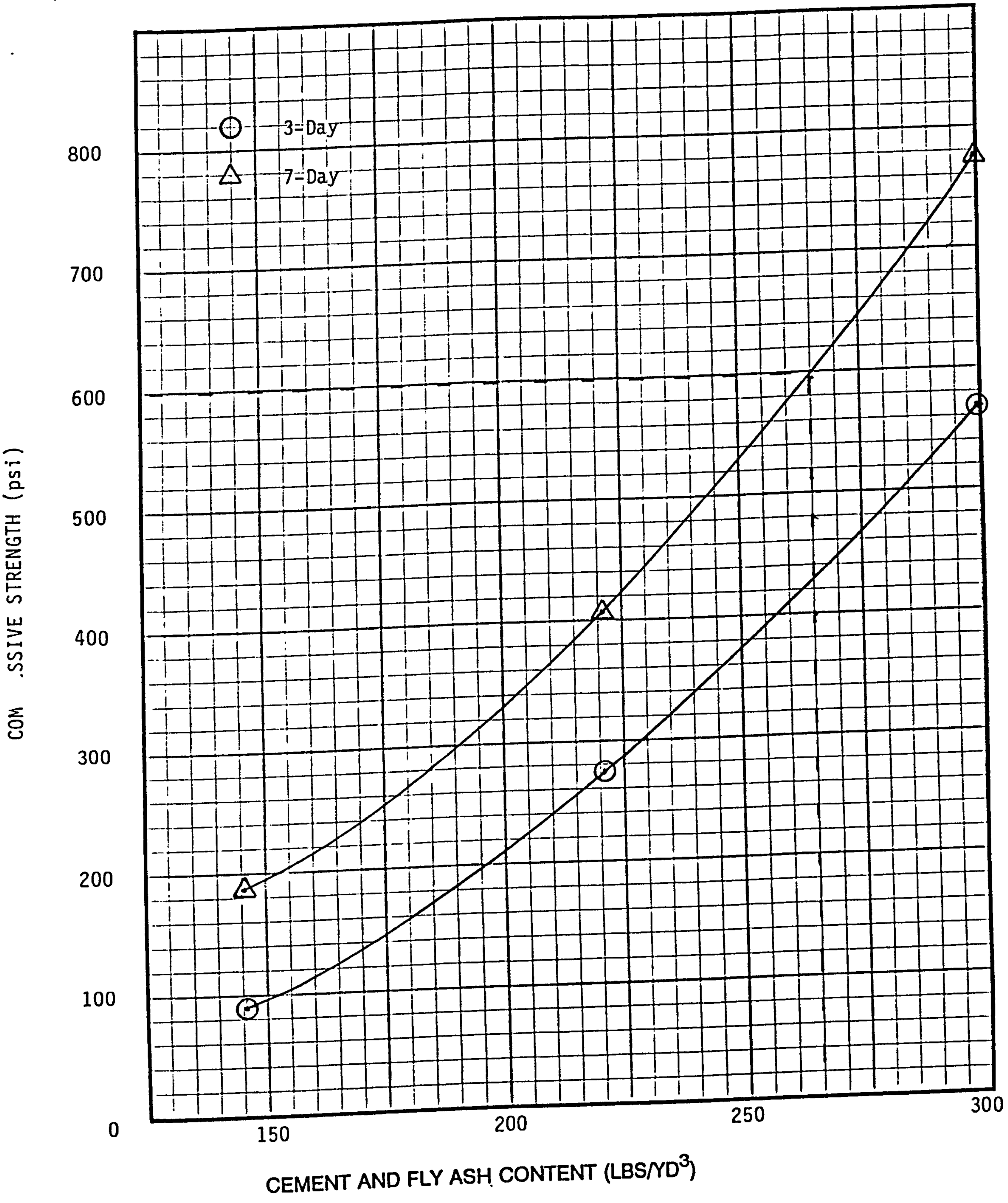
3-Day	7-Day
400-460	550-750

COMMERCIAL TESTING LABORATORIES

Orville R. Werner

Orville R. Werner II, P.E.

6-15-93



Lean Concrete Base

Cement- Southwest I/II
Fly Ash - Pozzolanic Bridger
Air Entraining Admixture - MB Pave Air
Air Content - 8.9% to 9.0%: Slump 3 to 3-1/4 inches

Job No. 7774A

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS
DOH Form No. 157c
Revised August, 1987

FIELD SHEET NO.: 1081

PROJECT NUMBER: I76-1(138)

LOCATION: S.H. 51 to Bromley Lane

DISTRICT: 6 DATE: 02/23/94

FIELD REPORT FOR SAMPLE IDENTIFICATION OR MATERIALS DOCUMENTATION

3200	P	89015
Function	Part.	Project ID No.

SAMPLE SUBMITTED:

ITEM: 412 CLASS: CONCRETE PAVEMENT GRADING: SPECIAL PROVISIONS APPL:YES[ ] NO[*]

PREVIOUSLY USED ON PROJECT: DOH 157 NO.: DOH 158 NO.:

DESCRIBE TESTS REQUIRED, USE TO BE MADE OF MATERIAL, AND/OR DOCUMENTATION
DETAILS: This report documents the source of water used for batching concrete for concrete pavment. Castle Rock and Mobile Premix supplied concrete for paving. Castle Rock obtained water for their on site batch plant from Brighton's domestic water supply. Water for Mobile Premix's batch plant was obtained from Denver's domestic water supply.

SAMPLE TYPE: DATE NEEDED:

CONTRACTOR: Castle SUPPLIER:

SAMPLED FROM: PIT NAME OR OWNER:

QUANTITY REPRESENTED: 244520. PREVIOUS QUANTITY: 0. TOTAL QUANTITY TO DATE: 244520.
UNITS: Square Yards

SAMPLE SUBMITTED: YES[ ] NO[*] SHIPPED TO: CENTRAL LAB[ ] VIA:
DISTRICT LAB[ ] DATE SHIPPED:

SAMPLED/
INSPECTED BY: Fred Braun Tech III SUPERVISOR: Brett Locke, P.E.
Project Engineer
Denver

CENTRAL LABORATORY RESIDENT ENGINEER
DISTRICT OFFICE
DISTRICT MATERIALS ENGINEER
PROJECT FILE

DIVISION OF HIGHWAYS
STATE OF COLORADO
DOH Form No. 804
April 1974

Project ID-I-NH(CX)076-1(138)

Date July 14, 1993

CONCRETE PLANT INSPECTION

PLANT Castle Rock Construction

CERTIFICATIONS:

AGGREGATE SCALES Inspected by American Scale Date inspected 7-13-93

CEMENT SCALES Same as above

WATER MEASURING DEVICE Badger Meter

WATER SOURCE City water

ADMIXTURES:	CONDITION OF MEASURING DEVICE SATISFACTORY	UNSATISFACTORY
AIR ENTRAINING AGENT:	XXXXXX	
POZZOLITH	XXXXXX	
OTHER	XXXXXX	

CEMENT FACILITIES: 2 bins 1 for cement and 1 for flyash

MIXING EQUIPMENT: Central Batch (12 yds.)

BATCHING PROCEDURE: Computer

COLD WEATHER OPERATION EQUIPMENT: None

REMARKS: This is a portable plant.

PLANT INSPECTED BY: Robert E. Andrew

LCB

EDOCO

22039 South Westward Avenue
Long Beach, CA 90810-1681
Tel: (310) 834-3401
Fax: (310) 830-4566

August 24, 1993

Burke Company
3745 E. 50th Street
Denver, CO, 80216

Attention: Vern Rider

CERTIFICATION

BURKE WAX EMULSION WHITE D.O.T.

LOT NO. 083492

Burke Wax Emulsion White D.O.T. is manufactured to comply with or exceed the following specifications:

AASHTO M-148, TYPE II, CLASS A
ASTM C-309, TYPE II, CLASS A
COLORADO DEPARTMENT OF TRANSPORTATION

LABORATORY QUALITY CONTROL EVALUATION

Vehicle	Wax/Resin
Color: Liquid	Creamy
Dry Film	White
Total Solids	19.84
Ash Content	3.00%
Weight/Gallon	8.35
Viscosity	28 cps
Drying Time	60 Minutes
Reflectance	64%
Unit Moisture Loss (AASHTO M-155)	0.040gm/cm^2

EDOCO

OFFICIAL SEAL
JOAN K. ROSE
Notary Public-California
LOS ANGELES COUNTY
My Commission Expires
March 19, 1995

Dennis S. Salley

Dennis S. Salley
Technical Service

SUBSCRIBED AND SWORN TO BEFORE ME
THIS 24th DAY OF Aug 19 93
Joan K. Rose
NOTARY PUBLIC

cc: T. Townsend
H. Uyeno
J. Watson

Section #59

W.R. MEADOWS OF TEXAS

SEALTIGHT.

TELEPHONE: 817-834-1969
FAX: 817-834-013

2555 N.E. 33RD STREET • P.O. BOX 7752
FORT WORTH, TEXAS 76111

Certificate of Analysis and Performance
SEALTIGHT 1610 White Concrete Curing Compound
Manufactured by W. R. Meadows of Texas

The following are the test results obtained by our laboratory in testing a sample of SEALTIGHT 1610 White Concrete Curing Compound. Batch # 3TH213

Property	SEALTIGHT 1610 White Concrete Curing Compound
Color of Compound	White
Solids-Type	Wax-Resin
Solids % @ 105°C	23.2
Specific Gravity 25°/25°C	1.004
Viscosity @ 40°F	Sprayable
Flash Point °F. TCC	Water Base
Moisture Loss in G/Cm²	
(200 ft 2/gal 100°F, f30% R. H.)	
24 Hours	.023
72 Hours	.034
Dry Time	60 Minutes
Daylight Reflectance	66%
Degree of Setting	7.8

As indicated by the foregoing test results, SEALTIGHT 1610 White Concrete Curing Compound complies with the test requirements of AASHTO M 148, Type II and ASTM C 309 Type II.

W. R. MEADOWS OF TEXAS

Andrew W. Tam

Andrew W. Tam
General Manager

Subscribed and sworn to before me
this 14 day of July 19 93

Melanie Campbell

Proj.: ID-I-NH(CX)76-1(138)
Adams County, Co.

Contr.: Castlerock Construction

STATE OF COLORADO
DEPARTMENT OF TRANSPORTATION

Date Transmitted: 11/08/93

Project ID : 89015
Project : ID-I-NH(CX) 076-1(138)
Location : I 76 & BROMLEY LANE
Region : 6
Field Sheet: 61286
Supplier : CASTLEROCK

REPORT OF CONCRETE TESTS

Item No. : 412
Concrete Class : P
Date Molded : 10/11/93
Slump : 0.75
Cylinder Set No.: 02

Placed At : EBML
Portion : 107+55 114+30

Air: 6.6 Unit Weight: 145

Specimen Number	Date Tested	Age (Days)	Diam.	Cross-Sectional Area	Maximum Load (lbs.)	Compressive Strength (psi)
1	10/18/93	7	4.01	12.6293	41080	3250
2	10/18/93	7	4.01	12.6293	38980	3090
3	11/08/93	28	4.01	12.6293	54750	4340
4	11/08/93	28	4.01	12.6293	54560	4320
5	11/08/93	28	4.01	12.6293	54910	4350

SHRP section U13, 550 psi flexural, 8" thick

Remarks: Cylinders tested in accordance with AASHTO T-22 as modified by CP-66.

DENIS E. DONNELLY

Staff Materials Engineer

cc: Region Const. Engr.
Region Matls. Engr.
Resident Engr. (2)
Contractor (2) c/o RE
File

CDOT Form 192
Revised 09/93

STATE OF COLORADO
DEPARTMENT OF TRANSPORTATION

Date Transmitted: 11/10/93

Project ID : 89015
Project : ID-I-NH(CX) 076-1(138)
Location : I 76 & BROMLEY LANE
Region : 6
Field Sheet: 61287
Supplier : CASTLEROCK

REPORT OF CONCRETE TESTS

Item No. : 412
Concrete Class : P
Date Molded : 10/13/93
Slump : 1
Cylinder Set No.: 03

Placed At : EBML
Portion : 121+35 128+30

Air: 7.4 Unit Weight: 142.6

Specimen Number	Date Tested	Age (Days)	Diam.	Cross-Sectional Area	Maximum Load (lbs.)	Compressive Strength (psi)
1	10/20/93	7	4.01	12.6293	29070	2300
2	10/20/93	7	4.01	12.6293	31250	2470
3	11/10/93	28	4.01	12.6293	41900	3320
4	11/10/93	28	4.01	12.6293	41860	3310
5	11/10/93	28	4.01	12.6293	42170	3340

SHRP Section 0815, 550 psi mix, 11" thick

Remarks: Cylinders tested in accordance with AASHTO T-22 as modified by CP-66.

DENIS E. DONNELLY

Staff Materials Engineer

cc: Region Const. Engr.
Region Matls. Engr.
Resident Engr. (2)
Contractor (2) c/o RE
File

CDOT Form 192
Revised 09/93

STATE OF COLORADO
DEPARTMENT OF TRANSPORTATION

Date Transmitted: 11/08/93

Project ID : 89015
Project : ID-I-NH(CX) 076-1(138)
Location : I 76 & BROMLEY LANE
Region : 6
Field Sheet: 61285
Supplier : CASTLEROCK

REPORT OF CONCRETE TESTS

Item No. : 412
Concrete Class : P
Date Molded : 10/11/93
Slump : 1.5
Cylinder Set No.: 04

Placed At : EBML
Portion : 101+40 107+55

Air: 6.2 Unit Weight: 147

Specimen Number	Date Tested	Age (Days)	Diam.	Cross-Sectional Area	Maximum Load (lbs.)	Compressive Strength (psi)
1	10/18/93	7	4.02	12.6924	66790	5260
2	10/18/93	7	4.02	12.6924	71330	5620
3	11/08/93	28	4.02	12.6924	75530	5950
4	11/08/93	28	4.02	12.6924	86910	6850
5	11/08/93	28	4.02	12.6924	84980	6700

SHRP section U16, 900 psi flexural mix, 11" thick

Remarks: Cylinders tested in accordance with AASHTO T-22 as modified by CP-66.

DENIS E. DONNELLY

Staff Materials Engineer

cc: Region Const. Engr.
Region Matls. Engr.
Resident Engr. (2)
Contractor (2) c/o RE
File

CDOT Form 192
Revised 09/93

STATE OF COLORADO
DEPARTMENT OF TRANSPORTATION

Date Transmitted: 11/10/93

Project ID : 89015
Project : ID-I-NH(CX) 076-1(138)
Location : I 76 & BROMLEY LANE
Region : 6
Field Sheet: 61288
Supplier : CASTLEROCK

REPORT OF CONCRETE TESTS

Item No. : 412
Concrete Class : P
Date Molded : 10/13/93
Slump : 1.75
Cylinder Set No.: 05

Placed At : EBML
Portion : 141+30 121+35

Air: 6.3 Unit Weight: 146.3

Specimen Number	Date Tested	Age (Days)	Diam.	Cross-Sectional Area	Maximum Load (lbs.)	Compressive Strength (psi)
1	10/20/93	7	4.01	12.6293	63610	5040
2	10/20/93	7	4.01	12.6293	63250	5010
3	11/10/93	28	4.01	12.6293	77110	6110
4	11/10/93	28	4.01	12.6293	82140	6500
5	11/10/93	28	4.01	12.6293	77480	6130

SHRP section U14, 900 psi mix
8" thick

Remarks: Cylinders tested in accordance with AASHTO T-22 as modified by CP-66.

DENIS E. DONNELLY

Staff Materials Engineer

cc: Region Const. Engr.
Region Matls. Engr.
Resident Engr. (2)
Contractor (2) c/o RE
File

CDOT Form 192
Revised 09/93

STATE OF COLORADO
DEPARTMENT OF TRANSPORTATION

Date Transmitted: 11/18/93

Project ID : 89015
Project : ID-I-NH(CX)076-1(138)
Location : I 76 & BROMLEY LANE
Region : 6
Field Sheet: 61294
Supplier : CASTLEROCK

REPORT OF CONCRETE TESTS

Item No. : 412
Concrete Class : P
Date Molded : 10/21/93
Slump : 2.5
Cylinder Set No.: 06

Placed At :
Portion : SHRP SECTION V18

Air: 6.6 Unit Weight: 144.4

Specimen Number	Date Tested	Age (Days)	Diam.	Cross-Sectional Area	Maximum Load (lbs.)	Compressive Strength (psi)
1	10/28/93	7	4.01	12.6293	61140	4840
2	10/28/93	7	4.01	12.6293	62210	4930
3	11/18/93	28	4.01	12.6293	76010	6020
4	11/18/93	28	4.01	12.6293	81140	6420
5	11/18/93	28	4.01	12.6293	80440	6370

SHRP V18
400 psi mix

Remarks: Cylinders tested in accordance with AASHTO T-22 as modified by CP-66.

DENIS E. DONNELLY

Staff Materials Engineer

cc: Region Const. Engr.
Region Matls. Engr.
Resident Engr. (2)
Contractor (2) c/o RE
File

CDOT Form 192
Revised 09/93

STATE OF COLORADO
DEPARTMENT OF TRANSPORTATION

Date Transmitted: 10/07/93

Project ID : 89015
Project : ID-I-NH(CX) 076-1(138)
Location : I 76 & BROMLEY LANE
Region : 6
Field Sheet: 70757
Supplier : CASTLEROCK

REPORT OF CONCRETE TESTS

Item No. : 412
Concrete Class : P
Date Molded : 09/09/93
Slump : 2.25
Cylinder Set No.: 03

Placed At : 162+63 TO 169+25
Portion : EB LANE

Air: 6.4

Unit Weight: 145.3

Specimen Number	Date Tested	Age (Days)	Diam.	Cross-Sectional Area	Maximum Load (lbs.)	Compressive Strength (psi)
1	09/16/93	7	4.02	12.6924	69940	5510
2	09/16/93	7	4.02	12.6924	72310	5700
3	10/07/93	28	4.02	12.6924	84230	6640
4	10/07/93	28	4.02	12.6924	84060	6620
5	10/07/93	28	4.02	12.6924	82660	6530

Remarks: Cylinders tested in accordance with AASHTO T-22 as modified by CP-66.
COMPRESSIVE STRENGTH REQUIRED: 3000 PSI

SHRP section 0120, 900 psi

DENIS E. DONNELLY

Staff Materials Engineer

cc: Region Const. Engr.
Region Matls. Engr.
Resident Engr. (2)
Contractor (2) c/o RE
File

CDOT Form 192
Revised 09/93

STATE OF COLORADO
DEPARTMENT OF TRANSPORTATION

Date Transmitted: 11/19/93

Project ID : 89015
Project : ID-I-NH(CX)076-1(138)
Location : I 76 & BROMLEY LANE
Region : 6
Field Sheet: 61295
Supplier : CASTLEROCK

REPORT OF CONCRETE TESTS

Item No. : 412
Concrete Class : P
Date Molded : 10/22/93
Slump : 1
Cylinder Set No.: 04

Placed At : SHRP SECTION V19
Portion :

Air: 5.4 Unit Weight: 145.7

Specimen Number	Date Tested	Age (Days)	Diam.	Cross-Sectional Area	Maximum Load (lbs.)	Compressive Strength (psi)
1	10/29/93	7	4.01	12.6293	31600	2500
2	10/29/93	7	4.01	12.6293	31100	2460
3	11/19/93	28	4.01	12.6293	42270	3350
4	11/19/93	28	4.01	12.6293	43380	3430
5	11/19/93	28	4.01	12.6293	44620	3530

SHRP
550 psi mix

V19

Remarks: Cylinders tested in accordance with AASHTO T-22 as modified by CP-66.

DENIS E. DONNELLY

Staff Materials Engineer

cc: Region Const. Engr.
Region Matls. Engr.
Resident Engr. (2)
Contractor (2) c/o RE
File

CDOT Form 192
Revised 09/93

STATE OF COLORADO
DEPARTMENT OF TRANSPORTATION

Date Transmitted: 10/01/93

Project ID : 89015
Project : I-ID-NH(CX) 76-1(138)
Location : I 76 & BROMLEY LANE
Region : 6
Field Sheet: 70754
Supplier : CASTLEROCK

U22

REPORT OF CONCRETE TESTS

Item No. : 412
Concrete Class : P
Date Molded : 09/03/93
Slump : 2.5
Cylinder Set No.: 01

Placed At : 198+54 TO 191+79
Portion : EB LANE

Air: 5.3

Unit Weight: 146.6

Specimen Number	Date Tested	Age (Days)	Diam.	Cross-Sectional Area	Maximum Load (lbs.)	Compressive Strength (psi)
1	09/13/93	10	4.02	12.6924	78700	6200
2	09/13/93	10	4.02	12.6924	75750	5970
3	10/01/93	28	4.02	12.6924	90990	7170
4	10/01/93	28	4.02	12.6924	87570	6900
5	10/01/93	28	4.02	12.6924	88090	6940

900 psi mix, SHRP

Remarks: Cylinders tested in accordance with AASHTO T-22 as modified by CP-66.
COMPRESSIVE STRENGTH REQUIRED: 3000 PSI

DENIS E. DONNELLY

Staff Materials Engineer

cc: Region Const. Engr.
Region Matls. Engr.
Resident Engr. (2)
Contractor (2) c/o RE
File

CDOT Form 192
Revised 09/93

STATE OF COLORADO
DEPARTMENT OF TRANSPORTATION

Date Transmitted: 10/01/93

Project ID : 89015
Project : I-ID-NH(CX) 76-1(138)
Location : I 76 & BROMLEY LANE
Region : 6
Field Sheet: 70753
Supplier : CASTLEROCK

REPORT OF CONCRETE TESTS

Item No. : 412
Concrete Class : P
Date Molded : 09/03/93
Slump : 2
Cylinder Set No.: 01

Placed At : 206+20 TO 198+54
Portion : EB LANE

Air: 8 Unit Weight: 140.2

Specimen Number	Date Tested	Age (Days)	Diam.	Cross-Sectional Area	Maximum Load (lbs.)	Compressive Strength (psi)
1	09/13/93	10	4.02	12.6924	31440	2480
2	09/13/93	10	4.02	12.6924	32310	2550
3	10/01/93	28	4.02	12.6924	40180	3170
4	10/01/93	28	4.02	12.6924	39110	3080
5	10/01/93	28	4.02	12.6924	41140	3240

U23

550 psi SHRP

Remarks: Cylinders tested in accordance with AASHTO T-22 as modified by CP-66.
ASSURANCE TEST PERFORMED BY VIC BROWN
AIR: 7.8%
SLUMP: 2"

DENIS E. DONNELLY

Staff Materials Engineer

cc: Region Const. Engr.
Region Matls. Engr.
Resident Engr. (2)
Contractor (2) c/o RE
File

CDOT Form 192
Revised 09/93

STATE OF COLORADO
DEPARTMENT OF TRANSPORTATION

Date Transmitted: 10/06/93

Project ID : 89015
Project : ID-I-NH(CX) 076-1(138)
Location : I 76/BROMLEY LANE
Region : 6
Field Sheet: 70756
Supplier : CASTLEROCK

REPORT OF CONCRETE TESTS

Item No. : 412
Concrete Class : P
Date Molded : 09/08/93
Slump : 1.75
Cylinder Set No.: 02

Placed At : ~~172~~ 174+90 TO 169+27
Portion : EB LANE

Air: 5.8 Unit Weight: 146.8

Specimen Number	Date Tested	Age (Days)	Diam.	Cross-Sectional Area	Maximum Load (lbs.)	Compressive Strength (psi)
1	09/15/93	7	4.01	12.6293	74310	5880
2	09/15/93	7	4.01	12.6293	75190	5950
3	10/06/93	28	4.02	12.6924	85840	6760
4	10/06/93	28	4.02	12.6924	89260	7030
5	10/06/93	28	4.02	12.6924	87950	6930

Remarks: Cylinders tested in accordance with AASHTO T-22 as modified by CP-66.

SHRP section 024 900psi

DENIS E. DONNELLY

Staff Materials Engineer

cc: Region Const. Engr.
Region Matls. Engr.
Resident Engr. (2)
Contractor (2) c/o RE
File

CDOT Form 192
Revised 09/93

STATE OF COLORADO
DEPARTMENT OF TRANSPORTATION

Date Transmitted: 10/21/93

Project ID : 89015
Project : ID-I-NH(CX)076-1(138)
Location : I 76 @ BROMLEY LANE
Region : 6
Field Sheet: 61291
Supplier : CASTLEROCK

REPORT OF CONCRETE TESTS

Item No. : 309
Concrete Class : LEAN
Date Molded : 10/14/93
Slump : 1.5
Cylinder Set No.: 01 *

Placed At : 140+65 TO 146+90
Portion : E. BOUND

Air: 5.4 Unit Weight: 143.2

Specimen Number	Date Tested	Age (Days)	Diam.	Cross-Sectional Area	Maximum Load (lbs.)	Compressive Strength (psi)
1	10/21/93	7	4.02	12.6924	7980	630
* 2	10/21/93	7	4.02	12.6924	3500	280
3	10/21/93	7	4.02	12.6924	7550	590

Lean Concrete Base
SHRP Section U18

Remarks: Cylinders tested in accordance with AASHTO T-22 as modified by CP-66.
* Deviation from SHRP Guidelines of 500 PSI - 750 PSI.

DENIS E. DONNELLY

Staff Materials Engineer

cc: Region Const. Engr.
Region Matls. Engr.
Resident Engr. (2)
Contractor (2) c/o RE
File

CDOT Form 192
Revised 09/93

STATE OF COLORADO
DEPARTMENT OF TRANSPORTATION

Date Transmitted: 10/21/93

Project ID : 89015
Project : ID-I-NH(CX)076-1(138)
Location : I 76 @ BROMLEY LANE
Region : 6
Field Sheet: 61292
Supplier : CASTLEROCK

REPORT OF CONCRETE TESTS

Item No. : 309
Concrete Class : LEAN
Date Molded : 10/14/93
Slump : 1.75
Cylinder Set No.: 02*

Placed At : 140+65 TO 146+90
Portion : E. BOUND

Air: 4.9 Unit Weight: 143.6

Specimen Number	Date Tested	Age (Days)	Diam.	Cross-Sectional Area	Maximum Load (lbs.)	Compressive Strength (psi)
* 1	10/21/93	7	4.02	12.6924	5570	440
* 2	10/21/93	7	4.02	12.6924	6190	490
* 3	10/21/93	7	4.02	12.6924	5690	450

Lean Concrete Base
SHRP Section 0i4

Remarks: Cylinders tested in accordance with AASHTO T-22 as modified by CP-66.
* Deviation from SHRP Guidelines of 500 PSI - 750 PSI.

DENIS E. DONNELLY

Staff Materials Engineer

cc: Region Const. Engr.
Region Matls. Engr.
Resident Engr. (2)
Contractor (2) c/o RE
File

CDOT Form 192
Revised 09/93

STATE OF COLORADO
DEPARTMENT OF TRANSPORTATION

Date Transmitted: 10/21/93

Project ID : 89015
Project : ID-I-NH(CX)076-1(138)
Location : I 76 @ BROMLEY LANE
Region : 6
Field Sheet: 61293
Supplier : CASTLEROCK

REPORT OF CONCRETE TESTS

Item No. : 309
Concrete Class : LEAN
Date Molded : 10/14/93
Slump : 1.25
Cylinder Set No.: 03

Placed At : 149+45 TO 155+60
Portion : E. BOUND

Air: 4.8 Unit Weight: 145.2

Specimen Number	Date Tested	Age (Days)	Diam.	Cross-Sectional Area	Maximum Load (lbs.)	Compressive Strength (psi)
1	10/21/93	7	4.02	12.6924	7340	580
2	10/21/93	7	4.02	12.6924	7290	570
* 3	10/21/93	7	4.02	12.6924	5430	430

Lean Concrete Base
SHRP section U19

Remarks: Cylinders tested in accordance with AASHTO T-22 as modified by CP-66.
* Deviation from SHRP Guidelines of 500 PSI - 750 PSI.

DENIS E. DONNELLY

Staff Materials Engineer

cc: Region Const. Engr.
Region Matls. Engr.
Resident Engr. (2)
Contractor (2) c/o RE
File

CDOT Form 192
Revised 09/93

STATE OF COLORADO
DEPARTMENT OF TRANSPORTATION

Date Transmitted: 11/01/93

Project ID : 89015
Project : ID-I-NH(CX) 076-1(138)
Location : I 76 @ BROMLEY LANE
Region : 6
Field Sheet: 72501
Supplier : CASTLEROCK

REPORT OF CONCRETE TESTS

Item No. : 309
Concrete Class : LCB
Date Molded : 10/25/93
Slump : 2.25
Cylinder Set No.: 04 *

Placed At : STA 155+50 TO 149+90
Portion : SHOULDER

Air: 5.2 Unit Weight: 139.4

Specimen Number	Date Tested	Age (Days)	Diam.	Cross-Sectional Area	Maximum Load (lbs.)	Compressive Strength (psi)
1	11/01/93	7	4.02	12.6924	5590	440
2	11/01/93	7	4.02	12.6924	5270	420
3	11/01/93	7	4.02	12.6924	4300	340

Lean Concrete Base
419

Remarks: Cylinders tested in accordance with AASHTO T-22 as modified by CP-66.
*FAILED TO MEET THE 7 DAY, 500 PSI SHRP GUIDELINE.

DENIS E. DONNELLY

Staff Materials Engineer

cc: Region Const. Engr.
Region Matls. Engr.
Resident Engr. (2)
Contractor (2) c/o RE
File

CDOT Form 192
Revised 09/93

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS
DOH Form No. 157c
Revised August, 1987

FIELD SHEET NO.: 1034

PROJECT NUMBER: I76-1(138)

LOCATION: S.H. 51 to Bromley Lane

DISTRICT: 6 DATE: 08/26/93

FIELD REPORT FOR SAMPLE IDENTIFICATION OR MATERIALS DOCUMENTATION

3200	P	89015
Function	Part.	Project ID No.

SAMPLE SUBMITTED: NO

ITEM: 30110020 CLASS: PERMEABLE ASPHALT GRADING: SPECIAL PROVISIONS APPL:YES[ ] NO[*]

PREVIOUSLY USED ON PROJECT: NO DOH 157 NO.: DOH 158 NO.:

DESCRIBE TESTS REQUIRED, USE TO BE MADE OF MATERIAL, AND/OR DOCUMENTATION
DETAILS: Density tests on Permeable Asphalt Treated Base. No density specification.

Test	Date	Location	SHRP Section	Density
1	8/24/93	188+95, 33'R	U21	1.61
2	8/24/93	190+95, 33'R	U21	1.59
3	8/24/93	196+00, 33'R	U22	1.58
4	8/24/93	200+00, 33'R	U23	1.61
5	8/25/93	171+00, 33'R	U24	1.64
6	8/25/93	172+40, 47'R	U24	1.58

backscatter

SAMPLE TYPE: DATE NEEDED:

CONTRACTOR: B.R.O.C. SUPPLIER:

SAMPLED FROM: PIT NAME OR OWNER:

QUANTITY REPRESENTED: 6000. UNITS: TON

PREVIOUS QUANTITY:

TOTAL QUANTITY TO DATE: 6000.

SAMPLE SUBMITTED: YES[ ] NO[*]

SHIPPED TO: CENTRAL LAB[ ] DISTRICT LAB[ ] VIA: DATE SHIPPED:

Marc P. Olander

SAMPLED/
INSPECTED BY: FRED BRAUN TECH III

SUPERVISOR: Brett Locke, P.E.
Project Engineer
Denver

CENTRAL LABORATORY
DISTRICT OFFICE
DISTRICT MATERIALS ENGINEER
PROJECT FILE

RESIDENT ENGINEER

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS
DOH Form No. 157c
Revised August, 1987

FIELD SHEET NO.: 1039

PROJECT NUMBER: I76-1(138)

LOCATION: S.H. 51 to Bromley Lane

DISTRICT: 6 DATE: 09/15/93

FIELD REPORT FOR SAMPLE IDENTIFICATION OR MATERIALS DOCUMENTATION

3200	P	89015
Function	Part.	Project ID No.

SAMPLE SUBMITTED:

ITEM: 30110020 CLASS: PERMEABLE ASPHALT GRADING: SPECIAL PROVISIONS APPL:YES[*] NO[ ]

PREVIOUSLY USED ON PROJECT: NO DOH 157 NO.: DOH 158 NO.:

DESCRIBE TESTS REQUIRED, USE TO BE MADE OF MATERIAL, AND/OR DOCUMENTATION
DETAILS: A fractured faces test was run on #57 aggregate used for Permeable Asphalt Treated Base. One hundred precent of the sample tested had fractured faces. The specifications require a minimum of 90% fractured faces for the aggregate.

SAMPLE TYPE: CONST.

DATE NEEDED:

CONTRACTOR: B.R.O.C.

SUPPLIER: B.R.O.C.

SAMPLED FROM: PLANT

PIT NAME OR
OWNER:

QUANTITY
REPRESENTED:
UNITS: TONS

PREVIOUS
QUANTITY:

TOTAL QUANTITY
TO DATE:

SAMPLE
SUBMITTED: YES[ ] NO[*]

SHIPPED TO:
CENTRAL LAB[ ]
DISTRICT LAB[ ]

VIA:
DATE SHIPPED:

Marc E. Clark

SAMPLED/
INSPECTED BY: FRED BRAUN TECH III

SUPERVISOR: Brett Locke, P.E.
Project Engineer
Denver

CENTRAL LABORATORY
DISTRICT OFFICE
DISTRICT MATERIALS ENGINEER
PROJECT FILE

RESIDENT ENGINEER

Field Sheet No.: 1010

STATE OF COLORADO
Department of Highways
Division of Higl. .ys
DOH Form No. 58c
Revised August, 1987
Revised October, 1990

Project: 176-1(138)

Location: S.H. 51 to Bromley

District: 6

FIELD REPORT OF ASPHALT CONTENT OF
BITUMINOUS MIXTURES

Date: 09/15/93

Design Form 157 No.:

Form 43 Date: 08/25/93

Report Number: 1

Final Report: [Y]

CP 42 Method Used: B

Item Number: 30110020

Job Mix Formula Percent AC: 2.5

Range: -

TEST No.	DATE	STATION or PLACE	PERCENT ASPHALT
BT06	08/23/93	SECT U23	2.75
BT05	08/23/93	SECT U22	2.85
BT04	08/23/93	SECT U21	2.62
BT03	08/24/93	SECT U24	3.80
BT02	08/24/93	SECT U24	3.18
BT01	08/24/93	SECT U24	3.01

* Does Not Meet Project Specifications

Specification Deviations: N P = % Test No.: Action Taken:

Marc E. Olson

REMARKS: PERMEABLE ASPHALT TREATED BASE

Tester: CARL THEWES
Title: TECH II

CENTRAL LABORATORY
DISTRICT OFFICE

Supervisor: Brett Locke, P.E.
Address: Denver

FIELD SHEET: 1013

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS
DOH Form No. 6c
Rev. August, 1987

FIELD TESTS OF BASE AGGREGATES,
FILLERS AND MISCELLANEOUS AGGREGATES

Project: I76-1(138)
Location: S.H. 51 to Bromley Lane
District: 6
Report No.: 1
Date: 09/15/93
Item No.: 30110020
Description: PERMEABLE ASPHALT TREATED [redacted]E

TEST NO.	DATE	STATION	TONS or YARDS	FIELD DENSITY	LAB MAX DENSITY	% REL COMP.	2-1/2"	2"	1-1/2"	1"	1/2"	No. 4	No. 8	No. 16	No. 30	No. 40	No. 50	No. 100	No. 200
1	08/23/93		1000.						100.	97.	34.	4.	3.						1.5
2	08/23/93		1000.						100.	97.	33.	4.	3.						1.4
3	08/24/93		1000.						100.	98.	28.	3.	3.						1.1
				Specifications:				-	100.-	95.- 100.	25.- 60.	0.- 10.	0.- 5.		-				0.- 2.

Sheet Total: 3000.
Previous Total:
Total To Date: 3000.

Final Report: N

Spec. Deviations: N P = 0.00 % for Lot No. Action Taken:

dicates Specification Deviation

SOURCE: B.R.O.C.

REMARKS: #57 AGGREGATE USED FOR PATB

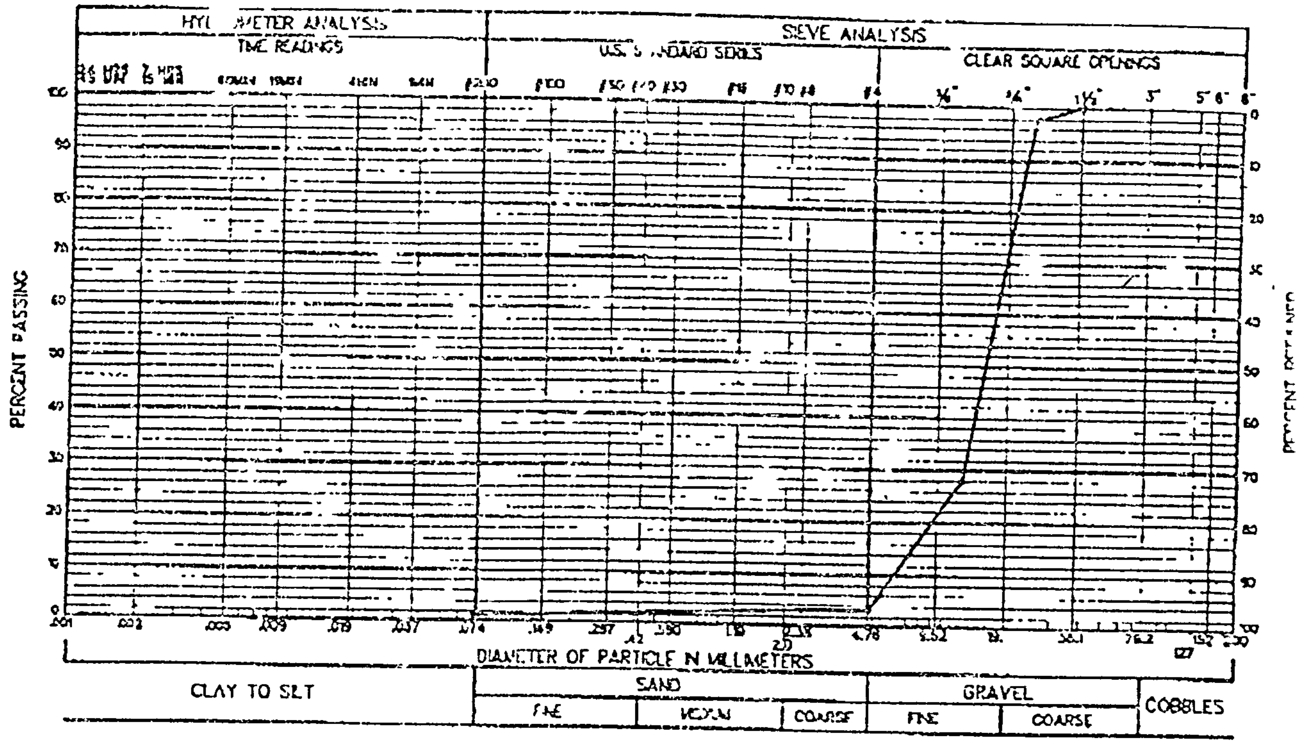
Tester: FRED BRAUN

Approved By:

Brett Lock[redacted]
Project Engir

CENTRAL LABORATORY
DISTRICT OFFICE
DISTRICT MATERIALS ENGINEER
PROJECT FILE
RESIDENT ENGINEER

Sample taken from aggregate cold feed at plant



SIEVE SIZE	PERCENT PASSING	SPECIFIED PERCENT PASSING
1 1/2	100	100
1	98	95-100
1/2	28	25-60
#4	3	0-10
#8	3	0-5
#200	1.1	0-2

GRAVEL 97 % SAND 2 % SILT AND CLAY 1 %

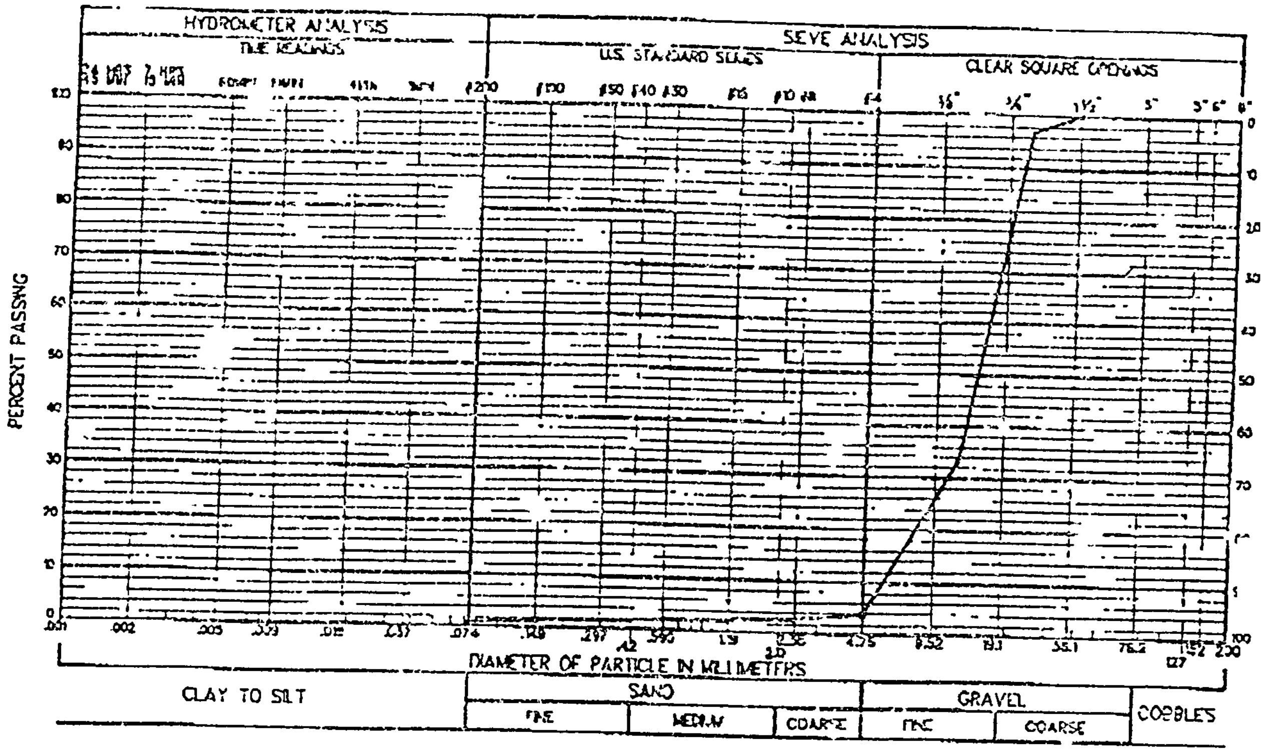
LIQUID LIMIT % PLASTICITY INDEX NPL %

SAMPLE OF: #57 Rock

FROM: I-76 PROJECT: ID-1-NH (CX) 76-1 (138)

DATE SAMPLED: 8/27/93 Sample 3

93-247	Kumar & Associates	GRADATION TEST RESULTS	FIG.



SIEVE SIZE	PERCENT PASSING	SPECIFIED PERCENT PASSING
1 1/2	100	100
1	97	95-100
1/2	33	25-60
#4	4	0-10
#8	3	0-5
#200	1.4	0-2

GRAVEL 96 % SAND 3 % SILT AND CLAY 1 %

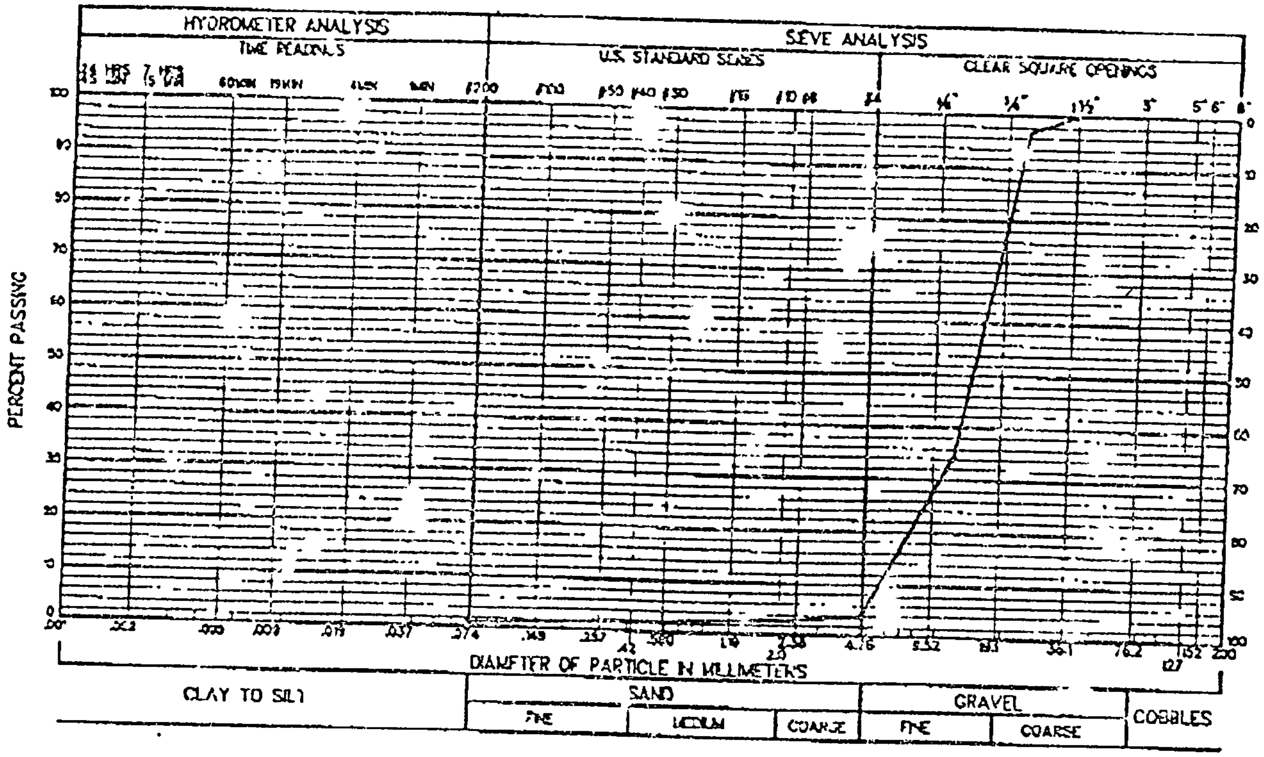
LIQUID LIMIT % PLASTICITY INDEX NPL %

SAMPLE OF: #57 Rock

FROM: 1-76 PROJECT: ID-1-NH (CX) 76-1 (138)

DATE SAMPLED: 8/27/93 Sample #2

93-247	Kumar & Associates	GRADATION TEST RESULTS	FIG.



SIEVE SIZE	PERCENT PASSING	SPECIFIED PERCENT PASSING
1 1/2	100	100
1	97	95-100
1/2	34	25-60
#4	4	0-10
#8	3	0-5
#200	1.5	0-2

GRAVEL 96 % SAND 2 % SILT AND CLAY 2 %

LIQUID LIMIT % PLASTICITY INDEX NPL %

SAMPLE OF: #57 Rock
FROM: 1-76 PROJECT: ID-1-NH (CX) 76-1 (138)
DATE SAMPLED: 8/27/93 Sample #1

93-247	Kumar & Associates	GRADATION TEST RESULTS	FIG.

APPENDIX C

MATERIAL THICKNESS MEASUREMENTS

SUBJECT ELEVATION SURVEY
SECTION U - 13
STATION 108+65 TO 113+65

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. ______ DATE ______
BY AJGREEN/GARCIA PAGE 6 OF ____

LAYER SUBGRADE

	1	2	3	4	5
E-12	0.693	0.746	0.814	0.870	0.948
E-13	0.804	0.889	0.955	0.960	1.080
E-14	0.964	1.060	1.122	1.170	1.235
E-15	1.102	1.232	1.278	1.302	1.376
E-16	1.306	1.421	1.462	1.500	1.555
E-17	1.466	1.544	1.623	1.660	1.744
E-18	1.619	1.730	1.784	1.822	1.898
E-19	1.846	1.949	1.993	2.034	2.166
E-20	2.016	2.119	2.178	2.212	2.282
E-21	2.246	2.340	2.385	2.422	2.560
E-22	2.452	2.550	2.599	2.643	2.708

SUBJECT ELEVATION SURVEY
SECTION U - 13
STATION 108+65 TO 113+65

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO: / DATE
BY. A J Grezkarovic PAGE 7 OF

LAYER BASE COURSE

	1	2	3	4	5
E-12	1.172	1.228	1.325	1.400	1.450
E-13	1.302	1.353	1.425	1.468	1.556
E-14	1.477	1.542	1.598	1.657	1.715
E-15	1.620	1.694	1.751	1.802	1.852
E-16	1.784	1.868	1.926	1.936	2.024
E-17	1.972	2.012	2.092	2.138	2.203
E-18	2.119	2.200	2.258	2.308	2.382
E-19	2.344	2.414	2.483	2.528	2.598
E-20	2.553	2.626	2.688	2.735	2.812
E-21	2.767	2.854	2.888	2.932	2.996
E-22	2.972	3.048	3.182 .102	3.166	3.232

SUBJECT ELEVATION SURVEY
SECTION U-13
STATION 108+65 TO 113+65

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO [illegible] DATE
BY [illegible] PAGE 8 OF

LAYER BASE TO SUBGRADE

	1	2	3	4	5
E-12	0.429 / 5.75	0.482 / 5.78	0.511 / 6.13	0.530 / 6.36	0.502 / 6.02
E-13	0.498 / 5.98	0.464 / 5.57	0.470 / 5.64	0.508 / 6.10	0.476 / 5.71
E-14	0.513 / 6.16	0.482 / 5.78	0.476 / 5.71	0.467 / 5.60	0.483 / 5.80
E-15	0.518 / 6.22	0.452 / 5.42	0.473 / 5.68	0.500 / 6.00	0.476 / 5.71
E-16	0.478 / 5.74	0.447 / 5.36	0.464 / 5.57	0.436 / 5.23	0.469 / 5.63
E-17	0.506 / 6.07	0.468 / 5.62	0.469 / 5.63	0.478 / 5.74	0.459 / 5.51
E-18	0.500 / 6.00	0.470 / 5.64	0.474 / 5.69	0.486 / 5.83	0.484 / 5.81
E-19	0.498 / 5.98	0.465 / 5.58	0.490 / 5.88	0.494 / 5.93	0.492 / 5.90
E-20	0.537 / 6.44	0.507 / 6.08	0.510 / 6.12	0.523 / 6.28	0.530 / 6.36
E-21	0.521 / 6.25	0.494 / 5.93	0.503 / 6.04	0.510 / 6.12	0.496 / 5.95
E-22	0.520 / 6.24	0.498 / 5.98	0.583 / 7.00	0.523 / 6.28	0.524 / 6.29
	66.83	62.74	65.09	65.47	64.75
	6.1	5.7	5.9	6.0	5.9

5.91

36 of 37

SUBJECT ELEVATION SURVEY
SECTION U-13
STATION 108+65 TO 113+65

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO / DATE
BY D. Greenbrook PAGE 9 OF

LAYER CONCRETE PAVEMENT

	1	2	3	4	5
E-12	1.885	1.994	2.060	2.108	2.180
E-13	2.028	2.136	2.198	2.252	2.318
E-14	2.150	2.260	2.318	2.370	2.436
E-15	2.318	2.422	2.480	2.542	2.615
E-16	2.492	2.596	2.659	2.720	2.784
E-17	2.668	2.771	2.837	2.888	2.954
E-18	2.824	2.928	2.995	3.050	3.113
E-19	3.034	3.137	3.200	3.253	3.324
E-20	3.236	3.334	3.398	3.452	3.524
E-21	3.432	3.534	3.595	3.654	3.721
E-22	3.650	3.752	3.821	3.875	3.946

SUBJECT ELEVATION SURVEY
SECTION U - 13
STATION 108+65 TO 113+65

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO ______ DATE ______
BY [illegible] PAGE 10 OF ______

LAYER CONCRETE TO BASE

	1	2	3	4	5
E-12	0.713 / 8.56	0.766 / 9.19	0.735 / 8.82	0.708 / 8.50	0.730 / 8.76
E-13	0.726 / 8.71	0.786 / 9.40	0.773 / 9.28	0.784 / 9.41	0.762 / 9.14
E-14	0.673 / 8.08	0.718 / 8.61	0.720 / 8.64	0.733 / 8.80	0.718 / 8.61
E-15	0.698 / 8.38	0.739 / 8.86	0.729 / 8.75	0.740 / 8.88	0.763 / 9.16
E-16	0.708 / 8.50	0.728 / 8.74	0.733 / 8.80	0.784 / 9.41	0.760 / 9.12
E-17	0.696 / 8.35	0.759 / 9.11	0.745 / 8.94	0.750 / 9.00	0.751 / 9.01
E-18	0.705 / 8.46	0.728 / 8.74	0.737 / 8.84	0.742 / 8.90	0.731 / 8.77
E-19	0.690 / 8.28	0.723 / 8.68	0.717 / 8.60	0.725 / 8.70	0.726 / 8.71
E-20	0.683 / 8.20	0.708 / 8.50	0.710 / 8.52	0.717 / 8.60	0.712 / 8.54
E-21	0.665 / 7.98	0.700 / 8.40	0.707 / 8.48	0.722 / 8.67	0.725 / 8.70
E-22	0.678 / 8.14	0.704 / 8.45	[illegible] / 8.63 8.63	0.709 / 8.51	0.714 / 8.57
	91.64 / 8.33	96.69 / 8.77	96.3 / 8.75	97.39 / 8.85	97.09 / 8.83

8.71

SUBJECT ELEVATION SURVEY
SECTION U-14
STATION 115+70 TO 120+70

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO ______ DATE ______
BY AJGREEN/KJEONG PAGE 11 OF ____

LAYER SUBGRADE

	1	2	3	4	5
E-23	0.300	0.382	0.435	0.474	0.558
E-24	0.506	0.593	0.643	0.682	0.760
E-25	0.702	0.786	0.843	0.882	0.952
E-26	0.916	0.988	1.056	1.099	1.170
E-27	1.132	1.221	1.279	1.318	1.384
E-28	1.340	1.425	1.474	1.514	1.591
E-29	1.533	1.619	1.664	1.716	1.794
E-30	1.768	1.836	1.888	1.920	1.996
E-31	1.946	2.014	2.102	2.150	2.222
E-32	2.172	2.278	2.318	2.367	2.437
E-33	2.328	2.442	2.493	2.548	2.628

SUBJECT: ELEVATION SURVEY
SECTION U-14
STATION 115+70 to 120+70

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO: DATE:
BY: AJ Gregg ... Jr. PAGE 12 OF

LAYER: BASE COURSE

	1	2	3	4	5
E-23	0.802	0.861	0.922	0.984	1.048
E-24	0.992	1.059	1.138	1.190	1.259
E-25	1.195	1.268	1.344	1.401	1.474
E-26	1.408	1.479	1.550	1.612	1.680
E-27	1.624	1.682	1.750	1.818	1.898
E-28	1.861	1.902	1.965	1.978	2.080
E-29	2.042	2.890	2.140	2.206	2.275
E-30	2.269	2.318	2.362	2.412	2.476
E-31	2.492	2.532	2.586	2.636	2.690
E-32	2.706	2.744	2.796	2.853	2.918
E-33	2.896	2.930	2.999	3.056	3.116

SUBJECT ELEVATION SURVEY
SECTION U-14
STATION 115+70 to 120+70

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO.: DATE:
BY: PAGE 13 OF

LAYER: BASE TO SUBGRADE

	1	2	3	4	5
E-23	0.562 / 6.02	0.479 / 5.75	0.487 / 5.84	0.510 / 6.12	0.490 / 5.88
E-24	0.486 / 5.83	0.466 / 5.59	0.495 / 5.94	0.508 / 6.10	0.499 / 5.99
E-25	0.493 / 5.92	0.482 / 5.78	0.501 / 6.01	0.519 / 6.23	0.522 / 6.26
E-26	0.492 / 5.90	0.491 / 5.89	0.494 / 5.93	0.513 / 6.16	0.510 / 6.12
E-27	0.492 / 5.90	0.461 / 5.53	0.471 / 5.65	0.550 / 6.60	0.514 / 6.17
E-28	0.521 / 6.25	0.477 / 5.72	0.491 / 5.89	0.464 / 5.57	0.489 / 5.87
E-29	0.509 / 6.11	0.471 / 5.65	0.476 / 5.71	0.490 / 5.88	0.481 / 5.77
E-30	0.501 / 6.01	0.482 / 5.78	0.474 / 5.69	0.492 / 5.90	0.480 / 5.76
E-31	0.546 / 6.55	0.518 / 6.22	0.484 / 5.81	0.485 / 5.82	0.468 / 5.62
E-32	0.534 / 6.41	0.466 / 5.60	0.478 / 5.74	0.486 / 5.83	0.481 / 5.77
E-33	0.568 / 6.82	0.488 / 5.86	0.506 / 6.07	0.562 / 6.62	0.488 / 5.86
	67.72	63.37	64.28	65.63	65.07

5.9

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

SUBJECT ELEVATION SURVEY
SECTION U-14
STATION 115+70 TO 120+70

JOB NO ______ DATE ______
BY AJ GREENLEAF PAGE 14 OF ______

LAYER CONCRETE PAVEMENTS

	1	2	3	4	5
E-23	1.502	1.558	1.619	1.675	1.734
E-24	1.710	1.766	1.829	1.884	1.944
E-25	1.912	1.968	2.029	2.084	2.144
E-26	2.125	2.183	2.244	2.296	2.360
E-27	2.330	2.387	2.445	2.497	2.555
E-28	2.534	2.596	2.654	2.710	2.769
E-29	2.739	2.800	2.856	2.914	2.977
E-30	2.960	3.010	3.074	3.126	3.182
E-31	3.176	3.230	3.288	3.342	3.400
E-32	3.380	3.433	3.494	3.544	3.608
E-33	3.582	3.635	3.692	3.745	3.810

SUBJECT ELEVATION SURVEY
SECTION U-14
STATION 115+70 TO 120+70

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. DATE
BY AJ ... PAGE 5 OF

LAYER CONCRETE TO BASE

	1	2	3	4	5
E-23	0.700 / 8.40	0.697 / 8.36	0.697 / 8.36	0.691 / 8.29	0.686 / 8.23
E-24	0.718 / 8.62	0.707 / 8.48	0.691 / 8.29	0.694 / 8.33	0.685 / 8.22
E-25	0.717 / 8.60	0.700 / 8.40	0.695 / 8.34	0.683 / 8.20	0.670 / 8.04
E-26	0.717 / 8.60	0.704 / 8.45	0.694 / 8.33	0.684 / 8.21	0.680 / 8.16
E-27	0.706 / 8.47	~~0.703~~ 8.46 / 8.46	0.695 / 8.34	0.679 / 8.15	0.657 / 7.88
E-28	0.673 / 8.08	0.694 / 8.33	0.689 / 8.27	0.732 / 8.78	0.689 / 8.27
E-29	0.697 / 8.36	0.710 / 8.52	0.716 / 8.59	0.708 / 8.50	0.702 / 8.42
E-30	0.691 / 8.29	0.692 / 8.30	0.712 / 8.54	0.714 / 8.57	0.706 / 8.47
E-31	0.684 / 8.21	0.698 / 8.38	0.702 / 8.42	0.707 / 8.48	0.710 / 8.52
E-32	0.674 / 8.09	0.689 / 8.27	0.698 / 8.38	0.691 / 8.29	0.690 / 8.28
E-33	0.686 / 8.23	0.705 / 8.46	0.693 / 8.32	0.695 / 8.34	0.694 / 8.33
	91.95	92.41	92.18	92.14	90.82

8.4

SUBJECT: ELEVATION SURVEY
SECTION U-15
STATION 122+65 TO 127+65

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO.: / DATE:
BY: D Grzelczak PAGE 11 OF

LAYER: SUBGRADE

	1	2	3	4	5
E-34	0.800	0.970	1.030	1.037	1.108
E-35	1.102	1.182	1.240	1.259	1.350
E-36	1.339	1.419	1.473	1.486	1.556
E-37	1.540	1.598	1.668	1.699	1.789
E-38	1.738	1.814	1.886	1.912	1.992
E-39	1.896	2.006	2.054	2.082	2.160
E-40	2.113	2.216	2.251	2.266	2.346
E-41	2.384	2.414	2.494	2.528	2.581
E-42	2.570	2.686	2.710	2.719	2.794
E-43	2.769	2.842	2.926	2.939	3.014
E-44	2.982	3.050	3.118	3.122	3.206

SUBJECT ELEVATION SURVEY
SECTION U-15
STATION 122+65 TO 127+65

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO / DATE
BY AJ GREEN/ARIZONA PAGE 17 OF

LAYER BASE COURSE

	1	2	3	4	5
E-34	1.398	1.443	1.508	1.578	1.658
E-35	1.608	1.657	1.726	1.783	1.851
E-36	1.840	1.888	1.944	2.008	2.072
E-37	2.037	2.084	2.143	2.200	2.264
E-38	2.248	2.294	2.354	2.418	2.487
E-39	2.405	2.469	2.530	2.616	2.668
E-40	2.608	2.668	2.729	2.796	2.872
E-41	2.868	2.924	2.991	3.051	3.118
E-42	3.094	3.140	3.200	3.250	3.316
E-43	3.271	3.336	3.392	3.452	3.509
E-44	3.461	3.519	3.575	3.641	3.712

SUBJECT ELEVATION SURVEY
SECTION U-15
STATION 122+65 TO 127+65

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. DATE
BY Adgreen, Brown PAGE 18 OF

LAYER BASE TO SUBGRADE

	1	2	3	4	5
E-34	0.598 / 7.18	0.473 / 5.68	0.478 / 5.74	0.541 / 6.49	0.550 / 6.60
E-35	0.506 / 6.07	0.475 / 5.70	0.486 / 5.83	0.524 / 6.29	0.501 / 6.01
E-36	0.501 / 6.01	0.469 / 5.63	0.471 / 5.65	0.522 / 6.26	0.516 / 6.19
E-37	0.497 / 5.96	0.486 / 5.83	0.475 / 5.70	0.501 / 6.01	0.475 / 5.70
E-38	0.510 / 6.12	0.480 / 5.76	0.468 / 5.62	0.506 / 6.07	0.495 / 5.94
E-39	0.509 / 6.11	0.463 / 5.56	0.476 / 5.71	0.534 / 6.41	0.508 / 6.10
E-40	0.495 / 5.94	0.452 / 5.42	0.478 / 5.74	0.530 / 6.36	0.526 / 6.31
E-41	0.484 / 5.81	0.520 / 6.24	0.497 / 5.96	0.523 / 6.28	0.537 / 6.44
E-42	0.524 / 6.29	0.454 / 5.45	0.490 / 5.88	0.531 / 6.37	0.522 / 6.26
E-43	0.502 / 6.02	0.494 / 5.93	0.466 / 5.59	0.513 / 6.16	0.495 / 5.94
E-44	0.479 / 5.75	0.469 / 5.63	0.457 / 5.48	0.519 / 6.23	0.506 / 6.07
	67.26	62.83	62.9	68.93	67.56
	6.11	5.71	5.72	6.27	6.14

5.99

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

SUBJECT ELEVATION SURVEY
SECTION U - 15
STATION 122+65 TO 127+65

JOB NO ________ DATE ________
BY AJ Greer / C. Arair PAGE 19 OF ____

LAYER Concrete Pavement

	1	2	3	4	5
E-34	2.360	2.414	2.474	2.530	2.594
E-35	2.576	2.624	2.687	2.744	2.807
E-36	2.792	2.850	2.909	2.964	3.026
E-37	2.968	3.030	3.088	3.154	3.218
E-38	3.187	3.250	3.310	3.365	3.422
E-39	3.360	3.422	3.481	3.545	3.610
E-40	3.552	3.608	3.680	3.733	3.800
E-41	3.794	3.852	3.914	3.964	4.030
E-42	4.029	4.084	4.138	4.192	4.260
E-43	4.248	4.303	4.360	4.412	4.478
E-44	4.444	4.498	4.563	4.615	4.676

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL
AND MATERIALS ENGINEERS

SUBJECT ELEVATION SURVEY
SECTION U-15
STATION 122+65 TO 127+65

JOB NO ______ DATE ______
BY Adjusted 11/20/12 PAGE 20 OF ______

LAYER CONCRETE TO BASE

	1	2	3	4	5
E-34	0.962 / 11.54	0.971 / 11.65	0.966 / 11.59	0.952 / 11.42	0.936 / 11.23
E-35	0.968 / 11.62	0.967 / 11.60	0.961 / 11.53	0.961 / 11.53	0.956 / 11.47
E-36	0.952 / 11.42	0.962 / 11.54	0.965 / 11.58	0.956 / 11.47	0.954 / 11.45
E-37	0.931 / 11.17	0.946 / 11.35	0.945 / 11.34	0.954 / 11.45	0.954 / 11.45
E-38	0.939 / 11.27	0.956 / 11.47	0.956 / 11.47	0.947 / 11.36	0.935 / 11.22
E-39	0.955 / 11.46	0.953 / 11.44	0.951 / 11.41	0.929 / 11.15	0.942 / 11.30
E-40	0.944 / 11.33	0.940 / 11.28	0.951 / 11.41	0.937 / 11.24	0.928 / 11.14
E-41	0.926 / 11.11	0.928 / 11.14	0.923 / 11.08	0.913 / 10.96	0.912 / 10.94
E-42	0.935 / 11.22	0.944 / 11.33	0.938 / 11.26	0.942 / 11.30	0.944 / 11.33
E-43	0.977 / 11.72	0.967 / 11.60	0.968 / 11.62	0.960 / 11.52	0.969 / 11.63
E-44	0.983 / 11.80	0.979 / 11.75	0.988 / 11.86	0.974 / 11.69	0.964 / 11.57
	125.66	126.15	126.15	125.09	124.73

11.4

SUBJECT. ELEVATION SURVEY
SECTION U-16
STATION 101+90 TO 106+90

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO ____ DATE ____
BY DJGREENGROVE PAGE 1 OF ____

LAYER SUBGRADE

	1	2	3	4	5
E-1	0.912	1.019	1.054	1.106	1.177
E-2	1.026	1.134	1.180	1.200	1.292
E-3	1.168	1.231	1.318	1.366	1.430
E-4	1.280	1.402	1.443	1.475	1.548
E-5	1.386	1.510	1.550	1.582	1.664
E-6	1.484	1.607	1.657	1.677	1.777
E-7	1.582	1.726	1.747	1.778	1.860
E-8	1.697	1.827	1.867	1.924	1.979
E-9	1.765	1.829	1.926	1.936	1.934
E-10	1.877	1.974	2.025	2.070	2.178
E-11	2.013	2.103	2.172	2.236	2.310

SUBJECT ELEVATION SURVEY
SECTION U-16
STATION 101+90 TO 106+90

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO ____ DATE ____
BY AJ Gregory, Jr. PAGE 2 OF ____

LAYER BASE COURSE

	1	2	3	4	5
E-1	1.426	1.499	1.572	1.610	1.689
E-2	1.511	1.598	1.658	1.709	1.784
E-3	1.652	1.716	1.788	1.822	1.904
E-4	1.770	1.852	1.922	1.968	2.022
E-5	1.864	1.952	1.999	2.055	2.135
E-6	1.990	2.063	2.125	2.182	2.242
E-7	2.084	2.174	2.232	2.297	2.357
E-8	2.195	2.286	2.358	2.421	2.470
E-9	2.288	2.370	2.458	2.494	2.526
E-10	2.414	2.515	2.596	2.641	2.688
E-11	1.518	1.612	1.680	1.755	1.802

E-11 CONTROL POINT DISTURBED - DISREGARD

30432

SUBJECT ELEVATION SURVEY
SECTION U-16
STATION 101+90 TO 106+90

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. DATE
BY DJ Greenlgrove PAGE 3 OF

LAYER BASE TO SUBGRADE

	1	2	3	4	5
E-1	0.514 / 6.17	0.480 / 5.78 5.76	0.518 / 6.22	0.504 / 6.05	0.512 / 6.14
E-2	0.485 / 5.82	0.464 / 5.57	0.478 / 5.74	0.509 / 6.11	0.492 / 5.90
E-3	0.484 / 5.81	0.435 / 5.22	0.470 / 5.64	0.456 / 5.47	0.474 / 5.69
E-4	0.490 / 5.88	0.450 / 5.40	0.479 / 5.75	0.493 / 5.92	0.474 / 5.69
E-5	0.478 / 5.74	0.442 / 5.30	0.449 / 5.39	0.473 / 5.68	0.471 / 5.65
E-6	0.506 / 6.08	0.456 / 5.47	0.468 / 5.62	0.505 / 6.06	0.465 / 5.58
E-7	0.502 / 6.02	0.448 / 5.38	0.485 / 5.82	0.519 / 6.23	0.497 / 5.96
E-8	0.498 / 5.98	0.459 / 5.51	0.491 / 5.89	0.497 / 5.96	0.491 / 5.89
E-9	0.523 / 6.28	0.542 / 6.50	0.532 / 6.38	0.558 / 6.70	0.592 / 7.10
E-10	0.537 / 6.44	0.541 / 6.49	0.571 / 6.85	0.571 / 6.85	0.510 / 6.12
E-11					
	54.14	56.6	59.3	61.03	59.72

58

SUBJECT ELEVATION SURVEY
SECTION U-16
STATION 101+90 TO 106+90

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO.
DATE
BY 9J Greg Lazaro Jr. PAGE 4 OF

LAYER CONCRETE PAVEMENT

	1	2	3	4	5
E-1	2.378	2.477	2.537	2.586	2.652
E-2	2.486	2.580	2.639	2.687	2.748
E-3	2.599	2.691	2.753	2.800	2.860
E-4	2.724	2.824	2.890	2.942	3.008
E-5	2.838	2.932	2.998	3.046	3.113
E-6	2.923	3.016	3.076	3.128	3.193
E-7	3.044	3.137	3.196	3.248	3.314
E-8	3.152	3.250	3.308	3.360	3.424
E-9	3.267	3.369	3.432	3.482	3.553
E-10	3.388	3.480	3.544	3.592	3.663
E-11	3.502	3.593	3.658	3.708	3.774

SUBJECT ELEVATION SURVEY
SECTION U-16
STATION 101+90 TO 106+90

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO ___ DATE ___
BY A Jaramillo Jr. PAGE 5 OF ___

LAYER CONCRETE TO BASE

	1	2	3	4	5
E-1	0.952 / 11.42	0.978 / 11.73	0.965 / 11.58	0.976 / 11.71	0.963 / 11.56
E-2	0.975 / 11.70	0.982 / 11.78	0.981 / 11.77	0.978 / 11.74	0.964 / 11.57
E-3	0.947 / 11.36	0.975 / 11.70	0.965 / 11.58	0.978 / 11.74	0.956 / 11.47
E-4	0.954 / 11.45	0.972 / 11.66	0.968 / 11.62	0.974 / 11.69	0.986 / 11.83
E-5	0.974 / 11.69	0.980 / 11.76	0.999 / 11.99	0.991 / 11.89	0.978 / 11.74
E-6	0.933 / 11.20	0.953 / 11.44	0.951 / 11.41	0.946 / 11.35	0.951 / 11.41
E-7	0.960 / 11.52	0.963 / 11.56	0.964 / 11.57	0.951 / 11.41	0.957 / 11.48
E-8	0.957 / 11.48	0.964 / 11.57	0.950 / 11.40	0.939 / 11.27	0.954 / 11.45
E-9	0.979 / 11.75	0.999 / 11.99	0.974 / 11.69	0.988 / 11.86	1.027 / 12.32
E-10	0.974 / 11.69	0.965 / 11.58	0.948 / 11.38	0.951 / 11.41	0.975 / 11.70
E-11					
	115.26	116.77	115.99	116.07	116.53

11.6

55459

SUBJECT ELEVATION SURVEY
SECTION U-17
STATION 156+55 TO 161+55

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. / DATE

BY [illegible] PAGE 31 OF

LAYER SUBGRADE

	1	2	3	4	5
E-67	0.966	1.076	1.128	1.175	1.245
E-68	0.728	0.850	0.898	0.920	1.034
E-69	0.570	0.632	0.682	0.736	0.838
E-70	0.366	0.480	0.539	0.575	0.682
E-71	0.278	0.382	0.443	0.472	0.559
E-72	0.206	0.315	0.354	0.408	0.492
E-73	0.229	0.322	0.368	0.407	0.484
E-74	0.277	0.325	0.372	0.406	0.490
E-75	0.288	0.353	0.462	0.464	0.578
E-76	0.350	0.452	0.532	0.526	0.648
E-77	0.388	0.481	0.592	0.698	0.782

SUBJECT ELEVATION SURVEY
SECTION U - 17
STATION 156+55 TO 161+55

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. / DATE
BY. [illegible] PAGE 32 OF

LAYER LEAN CONCRETE BASE

	1	2	3	4	5
E-67	1.469	1.554	1.661	1.725	1.779
E-68	1.272	1.386	1.454	1.510	1.576
E-69	1.086	1.203	1.254	1.314	1.381
E-70	0.902	1.032	1.093	1.159	1.204
E-71	0.752	0.852	0.924	0.990	1.051
E-72	0.706	0.815	0.892	0.964	1.013
E-73	0.760	0.853	0.914	0.966	1.030
E-74	0.802	0.896	0.952	1.000	1.062
E-75	0.836	0.990	1.046	1.093	1.150
E-76	0.970	1.074	1.142	1.190	1.248
E-77	1.069	1.175	1.230	1.282	1.344

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SUBJECT. ELEVATION SURVEY
SECTION U-17
STATION 156+55 TO 161+55

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. / DATE
BY AJ 9/28/2 / 6/20/2 PAGE 33 OF

LAYER LCB TO SUBGRADE

	1	2	3	4	5
E-67	0.563 / 6.61	0.508 / 6.10	0.533 / 6.40	0.550 / 6.60	0.534 / 6.41
E-68	0.544 / 6.53	0.536 / 6.43	0.556 / 6.67	0.590 / 7.08	0.538 / 6.46
E-69	0.576 / 6.91	0.571 / 6.85	0.572 / 6.86	0.578 / 6.94	0.546 / 6.55
E-70	0.536 / 6.43	0.552 / 6.62	0.559 / 6.71	0.584 / 7.01	0.522 / 6.26
E-71	0.474 / 5.69	0.470 / 5.64	0.481 / 5.77	0.415 / 4.98	0.492 / 5.90
E-72	0.500 / 6.00	0.500 / 6.00	0.538 / 6.46	0.556 / 6.67	0.521 / 6.25
E-73	0.531 / 6.37	0.531 / 6.37	0.546 / 6.55	0.559 / 6.71	0.546 / 6.53
E-74	0.525 / 6.30	0.571 / 6.85	0.580 / 6.96	0.594 / 7.13	0.572 / 6.86
E-75	0.598 / 7.18	0.637 / 7.64	0.584 / 7.01	0.629 / 7.55	0.572 / 6.86
E-76	0.620 / 7.44	0.622 / 7.46	0.610 / 7.32	0.664 / 7.97	0.600 / 7.20
E-77	0.681 / 8.17	0.694 / 8.33	0.638 / 7.66	0.584 / 7.01	0.562 / 6.74
	73.06	74.31	74.31	75.65	72.04

6.7

SUBJECT ELEVATION SURVEY
SECTION U-17
STATION 156155 TO 161155

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. / DATE /
BY. [illegible] PAGE 34 OF

LAYER CONCRETE PAVEMENT

	1	2	3	4	5
E-67	2.186	2.285	2.346	2.407	2.477
E-68	1.977	2.077	2.139	2.193	2.270
E-69	1.749	1.852	1.919	1.979	2.048
E-70	1.600	1.699	1.763	1.820	1.895
E-71	1.427	1.589	1.656	1.708	1.778
E-72	1.442	1.534	1.604	1.660	1.720
E-73	1.472	1.573	1.640	1.700	1.762
E-74	1.568	1.670	1.736	1.794	1.848
E-75	1.612	1.706	1.774	1.828	1.886
E-76	1.692	1.794	1.853	1.904	1.960
E-77	1.794	1.892	1.954	1.998	2.066

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

SUBJECT: ELEVATION SURVEY
SECTION U-17
STATION 156+55 TO 161+55

JOB NO ____ DATE ____
BY [illegible] PAGE 35 OF ____

LAYER: CONCRETE TO LCB

	1	2	3	4	5
E-67	0.717 / 8.60	0.701 / 8.41	0.685 / 8.22	0.682 / 8.18	0.698 / 8.38
E-68	0.705 / 8.46	0.691 / 8.29	0.685 / 8.22	0.683 / 8.20	0.694 / 8.33
E-69	0.663 / 7.96	0.649 / 7.79	0.665 / 7.98	0.665 / 7.98	0.667 / 8.00
E-70	0.698 / 8.38	0.667 / 8.00	0.670 / 8.04	0.661 / 7.93	0.691 / 8.29
E-71	0.735 / 8.82	0.737 / 8.84	0.732 / 8.78	0.718 / 8.62	0.727 / 8.72
E-72	0.736 / 8.83	0.719 / 8.63	0.712 / 8.54	0.696 / 8.35	0.707 / 8.48
E-73	0.712 / 8.54	0.720 / 8.64	0.726 / 8.71	0.734 / 8.81	0.732 / 8.78
E-74	0.766 / 9.19	0.774 / 9.29	0.784 / 9.41	0.784 / 9.41	0.786 / 9.43
E-75	0.726 / 8.71	0.716 / 8.59	0.728 / 8.74	0.735 / 8.82	0.736 / 8.83
E-76	0.722 / 8.66	0.720 / 8.64	0.711 / 8.53	0.714 / 8.57	0.712 / 8.54
E-77	0.725 / 8.70	0.717 / 8.60	0.724 / 8.69	0.716 / 8.59	0.722 / 8.66
	94.85	93.72	93.86	93.46	94.44

8.55

SUBJECT ELEVATION SURVEY
SECTION U-18
STATION 141+40 TO 146+40

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO.: DATE
BY. A J GREENGARD JR PAGE 26 OF

LAYER SUBGRADE

	1	2	3	4	5
E-56	0.814	0.729	0.644	0.517	0.438
E-57	0.926	0.878	0.742	0.642	0.566
E-58	1.004	0.945	0.844	0.718	0.660
E-59	1.060	0.976	0.910	0.797	0.710
E-60	1.088	1.022	0.925	0.811	0.736
E-61	1.120	1.065	0.969	0.874	0.784
E-62	1.127	1.068	0.973	0.877	0.774
E-63	1.033	1.038	0.932	0.824	0.757
E-64	1.044	0.992	0.901	0.794	0.694
E-65	0.980	0.927	0.830	0.719	0.642
E-66	0.889	0.834	0.761	0.651	0.561

SUBJECT ELEVATION SURVEY
SECTION U-19
STATION 141+40 TO 146+40

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO.: DATE.
BY A. SCHEELGROVE PAGE 27 OF

LAYER LEAN CONCRETE BASE

	1	2	3	4	5
E-56	1.354	1.252	1.165	1.067	0.976
E-57	1.474	1.366	1.288	1.198	1.118
E-58	1.560	1.446	1.358	1.274	1.182
E-59	1.647	1.550	1.452	1.364	1.284
E-60	1.658	1.548	1.458	1.360	1.276
E-61	1.685	1.574	1.490	1.400	1.308
E-62	1.675	1.572	1.488	1.398	1.310
E-63	1.628	1.540	1.445	1.358	1.266
E-64	1.614	1.505	1.422	1.340	1.246
E-65	1.566	1.452	1.364	1.272	1.187
E-66	1.477	1.360	1.274	1.184	1.100

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SUBJECT. ELEVATION SURVEY
SECTION U-13
STATION 141+40 TO 146+40

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. ____ DATE ____
BY [illegible] PAGE 28 OF ____

LAYER LCB TO SUBGRADE

	1	2	3	4	5
E-56	0.540 / 6.48	0.523 / 6.28	0.519 / 6.23	0.550 / 6.60	0.538 / 6.46
E-57	0.548 / 6.58	0.488 / 5.86	0.546 / 6.55	0.556 / 6.67	0.552 / 6.62
E-58	0.556 / 6.67	0.501 / 6.01	0.514 / 6.17	0.556 / 6.67	0.522 / 6.26
E-59	0.587 / 7.04	0.574 / 6.89	0.542 / 6.50	0.567 / 6.80	0.574 / 6.89
E-60	0.570 / 6.84	0.526 / 6.31	0.533 / 6.40	0.549 / 6.59	0.540 / 6.48
E-61	0.565 / 6.78	0.509 / 6.11	0.521 / 6.25	0.526 / 6.31	0.524 / 6.29
E-62	0.548 / 6.58	0.504 / 6.05	0.515 / 6.18	0.521 / 6.25	0.536 / 6.43
E-63	0.540 / 6.48	0.502 / 6.02	0.513 / 6.16	0.534 / 6.41	0.515 / 6.18
E-64	0.570 / 6.84	0.513 / 6.16	0.521 / 6.25	0.546 / 6.55	0.552 / 6.62
E-65	0.586 / 7.03	0.525 / 6.30	0.534 / 6.41	0.553 / 6.64	0.545 / 6.54
E-66	0.582 / 6.98	0.501 / 6.01	0.510 / 6.12	0.533 / 6.40	0.539 / 6.47
	74.3	68.0	69.22	71.89	71.24

6.4

6.01 - 7.04

SUBJECT ELEVATION SURVEY
SECTION U-18
STATION 141+40 TO 146+40

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. / DATE
BY. [illegible] PAGE 29 OF

LAYER Concrete Pavement

	1	2	3	4	5
E-56	1.992	1.903	1.851	1.759	1.662
E-57	2.148	2.036	1.990	1.893	1.796
E-58	2.204	2.114	2.052	1.956	1.872
E-59	2.256	2.168	2.095	2.000	1.910
E-60	2.264	2.178	2.108	2.010	1.917
E-61	2.300	2.206	2.126	2.034	1.940
E-62	2.292	2.190	2.122	2.022	1.935
E-63	2.262	2.162	2.083	1.997	1.910
E-64	2.232	2.134	2.064	1.971	1.884
E-65	2.173	2.082	1.994	1.907	1.816
E-66	2.098	1.989	1.916	1.826	1.730

SUBJECT. ELEVATION SURVEY
SECTION U-18
STATION 141+40 TO 146+40

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO ______ DATE ______
BY RJ Greenfield PAGE 30 OF ______

LAYER CONCRETE TO LCB

	1	2	3	4	5
E-56	0.638 / 7.66	0.656 / 7.87	0.688 / 8.26	0.692 / 8.30	0.686 / 8.23
E-57	0.674 / 8.39	0.670 / 8.04	0.702 / 8.42	0.695 / 8.34	0.678 / 8.14
E-58	0.644 / 7.73	0.688 / 8.22	0.694 / 8.33	0.682 / 8.18	0.690 / 8.28
E-59	0.609 / 7.31	0.618 / 7.42	0.643 / 7.72	0.636 / 7.63	0.626 / 7.51
E-60	0.606 / 7.27	0.630 / 7.56	0.650 / 7.80	0.650 / 7.80	0.641 / 7.69
E-61	0.615 / 7.38	0.632 / 7.58	0.636 / 7.63	0.634 / 7.61	0.632 / 7.58
E-62	0.617 / 7.40	0.618 / 7.42	0.634 / 7.61	0.624 / 7.49	0.625 / 7.50
E-63	0.634 / 7.61	0.622 / 7.46	0.638 / 7.66	0.639 / 7.67	0.644 / 7.73
E-64	0.618 / 7.42	0.629 / 7.55	0.642 / 7.70	0.631 / 7.57	0.638 / 7.66
E-65	0.607 / 7.28	0.630 / 7.56	0.636 / 7.56	0.635 / 7.62	0.629 / 7.55
E-66	0.627 / 7.52	0.629 / 7.55	0.642 / 7.70	0.642 / 7.70	0.630 / 7.56
	82.67	84.03	86.39	85.91	85.43

7.7

7.27 - 8.42

SUBJECT ELEVATION SURVEY
SECTION U-19
STATION 149+95 TO 154+95

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CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL
AND MATERIALS ENGINEERS

JOB NO ______ DATE ______
BY AJGEERTY 02.06.02 PAGE 21 OF ______

LAYER SUBGRADE

	1	2	3	4	5
E-45	3.572	3.499	3.390	3.288	3.184
E-46	3.296	3.246	3.140	3.038	2.956
E-47	3.109	3.056	2.938	2.857	2.736
E-48	2.798	2.732	2.638	2.584	2.478
E-49	2.381	2.311	2.261	2.215	2.112
E-50	1.956	1.904	1.844	1.852	1.832
E-51	1.597	1.615	1.630	1.615	1.578
E-52	1.274	1.306	1.310	1.315	1.322
E-53	0.901	0.959	0.994	1.017	1.038
E-54	0.504	0.616	0.657	0.646	0.752
E-55	0.318	0.422	0.406	0.486	0.544

SUBJECT ELEVATION SURVEY
SECTION U - 19
STATION 149+95 TO 154+95

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO ______ DATE ______
BY AS GREENWOOD PAGE 22 OF ______

LAYER LEAN CONCRETE BASE

	1	2	3	4	5
E-45	4.099	4.000	3.913	3.820	3.711
E-46	3.856	3.757	3.662	3.565	3.476
E-47	3.616	3.583	3.419	3.327	3.240
E-48	3.289	3.182	3.110	3.034	2.964
E-49	2.928	2.864	2.818	2.766	2.710
E-50	2.552	2.520	2.481	2.443	2.408
E-51	2.191	2.176	2.162	2.146	2.134
E-52	1.916	1.924	1.930	1.946	1.960
E-53	1.432	1.444	1.488	1.525	1.565
E-54	1.039	1.123	1.168	1.234	1.284
E-55	0.825	0.868	0.936	0.988	1.048

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

SUBJECT: ELEVATION SURVEY
SECTION U-19
STATION 149+95 TO 154+95

JOB NO.: / DATE:
BY: MIGUEL GARCIA PAGE 23 OF

LAYER: LCB TO SUBGRADE

	1	2	3	4	5
E-45	0.527 / 6.32	0.501 / 6.01	0.523 / 6.28	0.532 / 6.38	0.527 / 6.32
E-46	0.560 / 6.72	0.511 / 6.13	0.522 / 6.26	0.530 / 6.36	0.520 / 6.24
E-47	0.507 / 6.08	0.447 / 5.36	0.481 / 5.77	0.470 / 5.64	0.504 / 6.05
E-48	0.491 / 5.89	0.450 / 5.40	0.472 / 5.66	0.450 / 5.40	0.486 / 5.83
E-49	0.547 / 6.56	0.553 / 6.34	0.557 / 6.68	0.551 / 6.61	0.598 / 7.18
E-50	0.596 / 7.15	0.616 / 7.39	0.637 / 7.64	0.591 / 7.09	0.576 / 6.91
E-51	0.594 / 7.13	0.531 / 6.37	0.532 / 6.38	0.531 / 6.37	0.556 / 6.67
E-52	0.542 / 6.50	0.518 / 6.22	0.520 / 6.24	0.525 / 6.30	0.538 / 6.46
E-53	0.531 / 6.37	0.485 / 5.82	0.494 / 5.93	0.508 / 6.10	0.527 / 6.32
E-54	0.585 / 7.02	0.512 / 6.14	0.525 / 6.28	0.538 / 6.46	0.532 / 6.38
E-55	0.507 / 6.08	0.446 / 5.35	0.530 / 6.36	0.502 / 6.02	0.504 / 6.05
	71.82	66.53	69.48	68.73	70.41

6.3

SUBJECT: ELEVATION SURVEY
SECTION U-19
STATION 149+95 TO 154+95

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO: / DATE:
BY: AJGreenhalgh Jr PAGE 24 OF

LAYER: CONCRETE PAVEMENT

	1	2	3	4	5
E-45	5.004	4.939	4.850	4.754	4.658
E-46	4.765	4.702	4.623	4.526	4.428
E-47	4.527	4.461	4.372	4.262	4.174
E-48	4.253	4.160	4.088	4.004	3.932
E-49	3.870	3.846	3.787	3.754	3.670
E-50	3.545	3.517	3.494	3.455	3.422
E-51	3.176	3.174	3.168	3.156	3.136
E-52	2.775	2.790	2.806	2.812	2.822
E-53	2.392	2.418	2.460	2.488	2.522
E-54	2.006	2.031	2.146	2.190	2.240
E-55	1.762	1.827	1.900	1.955	2.015

SUBJECT. ELEVATION SURVEY
SECTION U-19
STATION 149+95 TO 154+95

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. / DATE /
BY: A. J. Rozenkranz Jr. PAGE 25 OF

LAYER CONCRETE TO LCB

	1	2	3	4	5
E-45	0.905 / 10.86	0.939 / 11.27	0.937 / 11.24	0.934 / 11.21	0.947 / 11.36
E-46	0.909 / 10.91	0.945 / 11.34	0.961 / 11.53	0.958 / 11.50	0.952 / 11.42
E-47	0.911 / 10.93	0.958 / 11.50	0.953 / 11.44	0.935 / 11.22	0.934 / 11.21
E-48	0.969 / 11.63	0.975 / 11.74	0.975 / 11.74	0.970 / 11.64	0.968 / 11.62
E-49	0.942 / 11.30	0.982 / 11.78	0.969 / 11.63	0.988 / 11.86	0.960 / 11.52
E-50	0.993 / 11.92	0.997 / 11.96	1.013 / 12.16	1.012 / 12.14 (12.14)	1.014 / 12.17
E-51	0.985 / 11.82	0.998 / 11.98	1.006 / 12.07	1.010 / 12.12	10.02 / 12.02
E-52	0.959 / 11.51	0.966 / 11.59	0.976 / 11.71	0.972 / 11.66	0.962 / 11.54
E-53	0.960 / 11.52	0.974 / 11.69	0.972 / 11.66	0.963 / 11.56	0.957 / 11.48
E-54	0.917 / 11.00	0.953 / 11.44	0.966 / 11.59	0.956 / 11.47	0.956 / 11.47
E-55	0.937 / 11.24	0.959 / 11.51	0.964 / 11.57	0.967 / 11.60	0.967 / 11.60
	124.64	127.80	128.34	127.98	127.41

11.57

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SUBJECT ELEVATION SURVEY
SECTION U-20
STATION 163+30 TO 168+30

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO / DATE
BY RJ Greenlee, Jr. PAGE 36 OF

LAYER SUBGRADE

	1	2	3	4	5
E-78	0.614	0.692	0.750	0.814	0.878
E-79	0.706	0.786	0.832	0.909	0.984
E-80	0.833	0.902	0.949	1.021	1.096
E-81	0.922	1.001	1.057	1.119	1.187
E-82	1.018	1.090	1.160	1.236	1.292
E-83	1.105	1.199	1.251	1.322	1.388
E-84	1.198	1.290	1.342	1.410	1.477
E-85	1.334	1.398	1.461	1.514	1.594
E-86	1.390	1.486	1.552	1.606	1.665
E-87	1.498	1.584	1.614	1.686	1.737
E-88	1.605	1.723	1.778	1.829	1.865

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SUBJECT ELEVATION SURVEY
SECTION U-20
STATION 113+30 TO 168+30

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. ________ DATE ________
BY ________ PAGE 37 OF ____

LAYER LEAN CONCRETE BASE

	1	2	3	4	5
E-78	1.162	1.203	1.278	1.348	1.398
E-79	1.206	1.318	1.382	1.446	1.508
E-80	1.314	1.414	1.489	1.550	1.613
E-81	1.423	1.532	1.596	1.652	1.714
E-82	1.528	1.630	1.695	1.748	1.810
E-83	1.622	1.728	1.793	1.849	1.914
E-84	1.711	1.818	1.883	1.946	2.004
E-85	1.820	1.919	1.992	2.052	2.106
E-86	1.908	2.013	2.076	2.136	2.205
E-87	2.018	2.129	2.194	2.254	2.312
E-88	2.110	2.220	2.288	2.354	2.411

SUBJECT ELEVATION SURVEY
SECTION U-20
STATION 163+30 TO 163+30

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO / DATE
BY
PAGE 38 OF

LAYER LCB TO SUBGRADE

	1	2	3	4	5
E-78	0.488 / 5.86	0.516 / 6.19	0.525 / 6.34	0.534 / 6.41	0.520 / 6.24
E-79	0.500 / 6.00	0.532 / 6.38	0.550 / 6.60	0.537 / 6.44	0.524 / 6.29
E-80	0.481 / 5.77	0.512 / 6.14	0.540 / 6.48	0.529 / 6.35	0.517 / 6.20
E-81	0.501 / 6.01	0.531 / 6.37	0.539 / 6.47	0.533 / 6.40	0.527 / 6.32
E-82	0.510 / 6.12	0.540 / 6.48	0.535 / 6.42	0.512 / 6.14	0.518 / 6.22
E-83	0.517 / 6.20	0.529 / 6.35	0.542 / 6.50	0.527 / 6.32	0.526 / 6.31
E-84	0.513 / 6.16	0.528 / 6.34	0.541 / 6.49	0.530 / 6.36	0.527 / 6.32
E-85	0.486 / 5.83	0.521 / 6.25	0.531 / 6.37	0.538 / 6.46	0.512 / 6.14
E-86	0.518 / 6.22	0.527 / 6.32	0.524 / 6.29	0.530 / 6.36	0.546 / 6.48
E-87	0.520 / 6.24	0.545 / 6.54	0.580 / 6.96	0.568 / 6.82	0.575 / 6.90
E-88	0.505 / 6.06	0.497 / 5.96	0.510 / 6.12	0.525 / 6.30	0.546 / 6.55
	66.47	69.32	71.04	70.36	69.97

6.3

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SUBJECT ELEVATION SURVEY
SECTION U-20
STATION 163+30 TO 168+30

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. / DATE
BY [illegible] PAGE 57 OF

LAYER CONCRETE PAVEMENT

	1	2	3	4	5
E-78	2.043	2.141	2.204	2.257	2.330
E-79	2.164	2.260	2.322	2.372	2.442
E-80	2.270	2.365	2.427	2.477	2.544
E-81	2.381	2.476	2.535	2.584	2.650
E-82	2.474	2.570	2.628	2.682	2.749
E-83	2.573	2.664	2.727	2.778	2.840
E-84	2.678	2.774	2.832	2.886	2.954
E-85	2.802	2.896	2.957	3.014	3.086
E-86	2.868	2.957	3.020	3.080	3.152
E-87	2.975	3.034	3.099	3.160	3.221
E-88	3.077	3.178	3.244	3.300	3.370

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

SUBJECT ELEVATION SURVEY
SECTION U-26
STATION 163+30 TO 168+30

JOB NO / DATE /
BY [illegible] PAGE 40 OF

LAYER CONCRETE TO LCB

	1	2	3	4	5
E-78	0.941 / 11.29	0.933 / 11.20	0.926 / 11.11	0.909 / 10.91	0.932 / 11.18
E-79	0.958 / 11.50	0.942 / 11.30	0.940 / 11.28	0.926 / 11.11	0.934 / 11.21
E-80	0.956 / 11.47	0.951 / 11.41	0.938 / 11.26	0.927 / 11.12	0.931 / 11.17
E-81	0.958 / 11.50	0.944 / 11.33	0.939 / 11.27	0.932 / 11.18	0.936 / 11.23
E-82	0.946 / 11.35	0.940 / 11.28	0.933 / 11.20	0.934 / 11.21	0.939 / 11.27
E-83	0.951 / 11.41	0.936 / 11.23	0.934 / 11.21	0.929 / 11.15	0.926 / 11.11
E-84	0.967 / 11.60	0.956 / 11.47	0.949 / 11.39	0.946 / 11.35	0.950 / 11.40
E-85	0.982 / 11.78	0.977 / 11.72	0.965 / 11.58	0.962 / 11.54	0.980 / 11.76
E-86	0.960 / 11.52	0.944 / 11.33	0.944 / 11.33	0.944 / 11.33	0.947 / 11.36
E-87	0.957 / 11.48	0.905 / 10.86	0.905 / 10.86	0.906 / 10.87	0.909 / 10.91
E-88	0.967 / 11.60	0.958 / 11.50	0.956 / 11.47	0.946 / 11.35	0.959 / 11.51
	126.50	124.63	123.96	123.12	124.11

11.3

SUBJECT ELEVATION SURVEY
SECTION U-21
STATION 185+95 TO 190+95

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO
DATE 4/8
BY D. Wyrick, Acevez
PAGE
OF

LAYER SUBGRADE

	1	2	3	4	5
E-100	0.656	0.802	0.946	1.029	1.037
E-101	0.754	0.874	0.908	0.986	1.054
E-102	0.860	0.972	1.061	1.160	1.180
E-103	0.866	1.077	1.183	1.257	1.331
E-104	1.265	1.255	1.282	1.386	1.450
E-105	0.923	1.160	1.264	1.354	1.398
E-106	1.073	1.279	1.480	1.692	1.687
E-107	1.105	1.303	1.406	1.606	1.670
E-108	1.332	1.407	1.546	1.654	1.730
E-109	1.496	1.656	1.759	1.841	1.986
E-110	1.570	1.744	1.852	1.969	2.070

SUBJECT ELEVATION SURVEY
SECTION U-21
STATION 185+95 TO 190+95

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL
AND MATERIALS ENGINEERS

JOB NO
DATE
BY. A. Jgreenlard Jr. PAGE 49 OF

LAYER BASE COURSE

	1	2	3	4	5
E-100	1.005	1.104	1.190	1.256	1.293
E-101	1.106	1.206	1.289	1.363	1.403
E-102	1.212	1.294	1.363	1.431	1.504
E-103	1.290	1.378	1.447	1.544	1.628
E-104	1.400	1.486	1.577	1.642	1.696
E-105	1.452	1.555	1.592	1.668	1.739
E-106	1.630	1.724	1.774	1.834	1.915
E-107	1.758	1.849	1.912	1.968	2.052
E-108	1.831	1.909	1.970	2.025	2.079
E-109	1.840	2.002	2.092	2.138	2.216
E-110	2.025	2.142	2.222	2.282	2.374

SUBJECT ELEVATION SURVEY
SECTION U-21
STATION 185+95 TO 190+95

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL
AND MATERIALS ENGINEERS

JOB NO. ____ DATE ____
BY [illegible] JR PAGE 50 OF ____

LAYER ~~BASE~~ TO SUBGRADE

	1	2	3	4	5
E-100	0.349 / 4.19	0.302 / 3.62	0.244 / 2.93	0.227 / 2.72	0.256 / 3.07
E-101	0.352 / 4.22	0.332 / 3.98	0.381 / 4.57	0.377 / 4.52	0.349 / 4.19
E-102	0.352 / 4.22	0.322 / 3.86	0.302 / 3.62	0.321 / 3.85	0.324 / 3.89
E-103	0.424 / 5.09	0.301 / 3.61	0.264 / 2.52	0.287 / 3.44	0.297 / 3.56
E-104	0.135 / 1.62	0.231 / 2.77	0.295 / 3.54	0.256 / 3.07	0.246 / 2.95
E-105	0.529 / 6.35	0.395 / 4.74	0.328 / 3.94	0.314 / 3.77	0.341 / 4.09
E-106	0.557 / 6.68	0.445 / 5.34	0.294 / 3.53	0.142 / 1.70	0.228 / 2.74
E-107	0.653 / 7.84	0.546 / 6.55	0.496 / 5.95	0.362 / 4.34	0.382 / 4.58
E-108	0.499 / 6.00	0.502 / 6.02	0.424 / 5.09	0.371 / 4.45	0.349 / 4.19
E-109	0.344 / 4.13	0.346 / 4.15	0.323 / 3.88	0.297 / 3.56	0.230 / 2.76
E-110	0.455 / 5.46	0.398 / 4.78	0.370 / 4.44	0.313 / 3.76	0.304 / 3.65
	55.80	49.42	44.01	39.18	39.67

4.1

SUBJECT. ELEVATION SURVEY
SECTION U-21
STATION 185+95 TO 190+95

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. ______ DATE ______
BY ASGHAR LAROUA PAGE 50 OF ______

LAYER PERMEABLE ASPHALT TREATED BASE

	1	2	3	4	5
E-100	1.285	1.412	1.492	1.553	1.650
E-101	1.397	1.512	1.615	1.656	1.728
E-102	1.494	1.660	1.716	1.760	1.834
E-103	1.582	1.685	1.797	1.849	1.936
E-104	1.754	1.850	1.894	1.927	1.990
E-105	1.792	1.908	1.953	2.002	2.087
E-106	1.952	2.030	2.103	2.153	2.229
E-107	2.010	2.161	2.230	2.272	2.358
E-108	2.118	2.208	2.292	2.306	2.373
E-109	2.121	2.282	2.380	2.412	2.486
E-110	2.291	2.470	2.556	2.591	2.656

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SUBJECT: ELEVATION SURVEY
SECTION U-21
STATION 185+95 TO 190+95

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO ______ DATE ______
BY Ajgre/Brour PAGE 51 OF ______

LAYER PATB TO BASE

	1	2	3	4	5
E-100	0.280 / 3.36	0.308 / 3.70	0.302 / 3.62	0.297 / 3.56	0.357 / 4.28
E-101	0.291 / 3.49	0.306 / 3.67	0.326 / 3.91	0.293 / 3.52	0.325 / 3.90
E-102	0.282 / 3.38	0.366 / 4.39	0.353 / 4.24	0.329 / 3.95	0.330 / 3.96
E-103	0.292 / 3.50	0.307 / 3.68	0.350 / 4.20	0.305 / 3.66	0.308 / 3.70
E-104	0.354 / 4.25	0.364 / 4.37	0.317 / 3.80	0.285 / 3.42	0.294 / 3.53
E-105	0.340 / 4.08	0.353 / 4.24	0.361 / 4.33	0.334 / 4.01	0.348 / 4.18
E-106	0.322 / 3.86	0.306 / 3.67	0.329 / 3.95	0.319 / 3.83	0.314 / 3.77
E-107	0.252 / 3.02	0.312 / 3.74	0.318 / 3.82	0.304 / 3.65	0.306 / 3.67
E-108	0.287 / 3.44	0.299 / 3.59	0.322 / 3.86	0.281 / 3.37	0.294 / 3.53
E-109	0.281 / 3.37	0.280 / 3.36	0.298 / 3.58	0.274 / 3.29	0.270 / 3.24
E-110	0.266 / 3.19	0.328 / 3.94	0.334 / 4.01	0.309 / 3.71	0.282 / 3.38
	38.94	42.35	43.32	39.97	41.14

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SUBJECT ELEVATION SURVEY
SECTION U-21
STATION 185+95 TO 190+95

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO ______ DATE ______
BY AJ Grealy / Drover PAGE 52 OF ______

LAYER CONCRETE PAVEMENT

	1	2	3	4	5
E-100		MISSING			
E-101	2.126	2.209	2.272	2.327	2.408
E-102	2.254	2.335	2.393	2.456	2.539
E-103	2.331	2.406	2.469	2.530	2.613
E-104	2.422	2.499	2.562	2.622	2.701
E-105	2.505	2.592	2.664	2.722	2.809
E-106	2.634	2.735	2.798	2.852	2.936
E-107	2.794	2.894	2.944	3.001	3.080
E-108	2.887	2.970	3.028	3.081	3.164
E-109	2.969	3.052	3.118	3.166	3.248
E-110	3.117	3.201	3.259	3.312	3.384

SUBJECT. ELEVATION SURVEY
SECTION U-21
STATION 185+95 TO 190+95

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO.: / DATE
BY [illegible] PAGE 53 OF

LAYER CONC. TO PATB

	1	2	3	4	5
E-100					
E-101	0.729 / 8.75	0.697 / 8.36	0.657 / 7.88	0.671 / 8.05	0.680 / 8.16
E-102	0.760 / 9.12	0.675 / 8.10	0.677 / 8.12	0.696 / 8.35	0.705 / 8.46
E-103	0.749 / 8.99	0.721 / 8.65	0.672 / 8.06	0.681 / 8.17	0.677 / 8.12
E-104	0.668 / 8.02	0.649 / 7.79	0.668 / 8.02	0.695 / 8.34	0.711 / 8.53
E-105	0.713 / 8.56	0.684 / 8.21	0.711 / 8.53	0.720 / 8.64	0.722 / 8.66
E-106	0.682 / 8.18	0.705 / 8.46	0.695 / 8.34	0.699 / 8.39	0.707 / 8.48
E-107	0.784 / 9.41	0.686 / 8.23	0.714 / 8.57	0.729 / 8.75	0.722 / 8.66
E-108	0.769 / 9.23	0.762 / 9.14	0.736 / 8.83	0.775 / 9.30	0.791 / 9.49
E-109	0.848 / 10.18	0.770 / 9.24	0.738 / 8.86	0.754 / 9.05	0.762 / 9.14
E-110	0.826 / 9.91	0.731 / 8.77	0.703 / 8.44	0.721 / 8.65	0.728 / 8.74
	90.35	84.95	83.65	85.69	86.44

8.6

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SUBJECT ELEVATION SURVEY
SECTION U-22
STATION 192+85 TO 197+85

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL
AND MATERIALS ENGINEERS

JOB NO ________ DATE ________
BY Vgreenyard PAGE 3 OF ______

LAYER SUBGRADE

	1	2	3	4	5
E-111	1.087	1.227	1.235	1.242	1.304
E-112	1.124	1.179	1.224	1.294	1.376
E-113	1.172	1.248	1.300	1.326	1.402
E-114	0.967	1.123	1.166	1.234	1.340
E-115	1.094	1.170	1.289	1.339	1.272
E-116	1.206	1.286	1.317	1.339	1.340
E-117	1.234	1.301	1.294	1.326	1.398
E-118	1.141	1.232	1.311	1.378	1.426
E-119	1.221	1.304	1.307	1.352	1.392
E-120	1.138	1.187	1.304	1.312	1.360
E-121	1.178	1.216	1.286	1.356	1.420

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SUBJECT ELEVATION SURVEY
SECTION U - 22
STATION 192+85 TO 197+85

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. / DATE
BY ASGARZADEH PAGE 54 OF

LAYER BASE COURSE

	1	2	3	4	5
E-111	1.465	1.526	1.588	1.621	1.668
E-112	1.504	1.543	1.605	1.654	1.741
E-113	1.528	1.583	1.654	1.693	1.744
E-114	1.554	1.594	1.648	1.691	1.770
E-115	1.513	1.555	1.624	1.676	1.744
E-116	1.440	1.483	1.586	1.622	1.691
E-117	1.479	1.530	1.587	1.632	1.708
E-118	1.469	1.520	1.590	1.641	1.732
E-119	1.490	1.512	1.562	1.616	1.684
E-120	1.484	1.512	1.563	1.633	1.722
E-121	1.480	1.526	1.563	1.627	1.712

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SUBJECT ELEVATION SURVEY
SECTION U-22
STATION 192+95 TO 197+85

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. ____ DATE ____
BY AJ Greenfield PAGE 58 OF ____

LAYER BASE TO SUBGRADE

	1	2	3	4	5
E-111	0.378 / 4.54	0.299 / 3.59	0.353 / 4.24	0.379 / 4.55	0.364 / 4.37
E-112	0.380 / 4.56	0.364 / 4.37	0.381 / 4.57	0.360 / 4.32	0.365 / 4.38
E-113	0.356 / 4.27	0.335 / 4.02	0.354 / 4.25	0.367 / 4.40	0.342 / 4.10
E-114	0.587 / 7.04	0.471 / 5.65	0.482 / 5.78	0.457 / 5.48	0.430 / 5.16
E-115	0.419 / 5.03	0.385 / 4.62	0.335 / 4.02	0.337 / 4.04	0.472 / 5.66
E-116	0.234 / 2.81	0.197 / 2.36	0.269 / 3.23	0.283 / 3.40	0.351 / 4.21
E-117	0.245 / 2.94	0.229 / 2.75	0.293 / 3.52	0.306 / 3.67	0.310 / 3.72
E-118	0.328 / 3.94	0.288 / 3.46	0.279 / 3.35	0.263 / 3.16	0.306 / 3.67
E-119	0.259 / 3.11	0.208 / 2.50	0.255 / 3.06	0.264 / 3.17	0.292 / 3.50
E-120	0.346 / 4.15	0.325 / 3.90	0.259 / 3.11	0.321 / 3.85	0.362 / 4.34
E-121	0.302 / 3.62	0.310 / 3.72	0.282 / 3.38	0.271 / 3.25	0.292 / 3.50
	46.01	40.94	42.51	43.29	46.61

4.0

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SUBJECT. ELEVATION SURVEY
SECTION U-22
STATION 192+95 TO 197+95

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO: DATE
BY [illegible] PAGE 56 OF

LAYER PERMEABLE ASPHALT TREATED BASE

	1	2	3	4	5
E-111	1.826	1.916	1.972	2.018	2.083
E-112	1.843	1.914	1.968	2.015	2.088
E-113	1.889	1.940	1.996	2.045	2.112
E-114	1.914	1.966	2.009	2.052	2.116
E-115	1.897	1.944	1.978	2.023	2.084
E-116	1.857	1.890	1.944	1.994	2.069
E-117	1.886	1.932	1.974	2.016	2.082
E-118	1.856	1.920	1.970	2.014	2.085
E-119	1.852	1.901	1.947	1.990	2.059
E-120	1.864	1.905	1.948	1.994	2.078
E-121	1.852	1.898	1.955	1.992	2.074

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SUBJECT ELEVATION SURVEY
SECTION U-22
STATION 192+85 TO 197+85

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO ______ DATE ______
BY. AJ Szczepkowski Jr. PAGE 57 OF ______

LAYER PATB TO BASE

	1	2	3	4	5
E-111	0.361 / 4.33	0.390 / 4.68	0.384 / 4.61	0.397 / 4.76	0.415 / 4.98
E-112	0.339 / 4.07	0.371 / 4.45	0.363 / 4.36	0.361 / 4.33	0.347 / 4.16
E-113	0.361 / 4.33	0.357 / 4.28	0.342 / 4.10	0.352 / 4.22	0.368 / 4.42
E-114	0.360 / 4.32	0.372 / 4.46	0.361 / 4.33	0.361 / 4.33	0.346 / 4.15
E-115	0.384 / 4.61	0.389 / 4.67	0.354 / 4.25	0.347 / 4.16	0.340 / 4.08
E-116	0.417 / 5.00	0.407 / 4.88	0.358 / 4.30	0.372 / 4.46	0.325 / 3.90
E-117	0.407 / 4.88	0.402 / 4.82	0.387 / 4.64	0.384 / 4.61	0.374 / 4.49
E-118	0.387 / 4.64	0.408 / 4.90	0.380 / 4.56	0.373 / 4.48	0.353 / 4.24
E-119	0.372 / 4.46	0.389 / 4.67	0.385 / 4.62	0.374 / 4.49	0.375 / 4.50
E-120	0.380 / 4.56	0.393 / 4.72	0.385 / 4.62	0.361 / 4.33	0.356 / 4.27
E-121	0.372 / 4.46	0.372 / 4.46	0.387 / 4.64	0.365 / 4.38	0.362 / 4.34
	49.66	50.99	49.03	48.55	48.33

4.5

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

SUBJECT ELEVATION SURVEY
SECTION U-22
STATION 192+85 TO 197+85

JOB NO ______ DATE ______
BY ______ PAGE 58 OF ______

LAYER CONCRETE PAVEMENT

	1	2	3	4	5
E-111	2.545	2.600	2.659	2.710	2.777
E-112	2.574	2.626	2.686	2.735	2.794
E-113	2.602	2.650	2.707	2.756	2.818
E-114	2.597	2.654	2.712	2.763	2.824
E-115	2.588	2.646	2.706	2.762	2.816
E-116	2.565	2.626	2.680	2.734	2.795
E-117	2.572	2.624	2.684	2.738	2.793
E-118	2.562	2.614	2.680	2.732	2.791
E-119	2.554	2.609	2.667	2.722	2.786
E-120	2.563	2.622	2.680	2.734	2.794
E-121	2.562	2.616	2.676	2.732	2.793

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SUBJECT ELEVATION SURVEY
SECTION U-22
STATION 192+95 TO 197+95

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL
AND MATERIALS ENGINEERS

JOB NO / DATE
BY Bo Graalgreve PAGE 59 OF

LAYER CONCRETE TO PATB

	1	2	3	4	5
E-111	0.719 / 8.63	0.694 / 8.21	0.687 / 8.24	0.692 / 8.30	0.694 / 8.33
E-112	0.731 / 8.77	0.712 / 8.54	0.718 / 8.62	0.720 / 8.64	0.706 / 8.47
E-113	0.713 / 8.56	0.710 / 8.52	0.711 / 8.53	0.711 / 8.53	0.706 / 8.47
E-114	0.683 / 8.20	0.688 / 8.26	0.703 / 8.44	0.711 / 8.53	0.708 / 8.50
E-115	0.691 / 8.29	0.702 / 8.42	0.728 / 8.74	0.739 / 8.87	0.732 / 8.78
E-116	0.708 / 8.50	0.738 / 8.83	0.736 / 8.83	0.740 / 8.88	0.726 / 8.71
E-117	0.716 / 8.59	0.692 / 8.30	0.710 / 8.52	0.722 / 8.66	0.711 / 8.53
E-118	0.706 / 8.47	0.694 / 8.33	0.710 / 8.52	0.718 / 8.62	0.706 / 8.47
E-119	0.702 / 8.42	0.708 / 8.50	0.720 / 8.64	0.732 / 8.78	0.727 / 8.72
E-120	0.704 / 8.45	0.717 / 8.60	0.732 / 8.78	0.740 / 8.88	0.716 / 8.59
E-121	0.710 / 8.52	0.718 / 8.62	0.721 / 8.65	0.740 / 8.88	0.719 / 8.63
	93.40	93.13	94.51	95.57	94.20

8.6

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

SUBJECT ELEVATION SURVEY
SECTION U-23
STATION 199+90 to 204+90

JOB NO ____ DATE ____
BY DJ Gaellard PAGE 60 OF ____

LAYER Subgrade

	1	2	3	4	5
E-122	0.651	0.707	0.819	0.925	1.003
E-123	1.034	1.098	1.152	1.181	1.281
E-124	1.600	1.660	1.713	1.782	1.806
E-125	2.016	2.103	2.176	2.298	2.394
E-126	2.422	2.506	2.594	2.699	2.765
E-127	3.147	3.225	3.264	3.314	3.392
E-128	3.794	3.872	3.920	4.010	4.095
E-129	4.587	4.648	4.700	4.773	4.820
E-130	5.252	5.332	5.370	5.424	5.488
E-131	5.946	6.078	6.109	6.156	6.222
E-132	6.642	6.722	6.770	6.858	6.892

SUBJECT. ELEVATION SURVEY
SECTION U-23
STATION 199+90 to 204+90

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO ____ DATE ____
BY. AUGUST ____ PAGE 61 OF ____

LAYER BASE COURSE

	1	2	3	4	5
E-122	1.030	1.080	1.142	1.202	1.266
E-123	1.431	1.487	1.549	1.607	1.678
E-124	1.847	1.918	1.994	2.036	2.106
E-125	2.378	2.439	2.506	2.568	2.639
E-126	2.978	3.030	3.102	3.163	3.242
E-127	3.611	3.660	3.728	3.808	3.872
E-128	4.222	4.333	4.416	4.484	4.554
E-129	4.976	5.019	5.096	5.156	5.234
E-130	5.641	5.686	5.754	5.822	5.892
E-131	6.394	6.442	6.508	6.556	6.632
E-132	7.046	7.099	7.174	7.211	7.281

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SUBJECT ELEVATION SURVEY
SECTION U-23
STATION 199+90 TO 204+90

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. ______ DATE ______
BY: DJ [illegible] PAGE 62 OF ______

LAYER BASE TO SUBGRADE

	1	2	3	4	5
E-122	0.379 / 4.55	0.373 / 4.48	0.323 / 3.88	0.277 / 3.32	0.263 / 3.16
E-123	0.397 / 4.76	0.389 / 4.67	0.397 / 4.76	0.426 / 5.11	0.397 / 4.76
E-124	0.247 / 2.96	0.258 / 3.10	0.281 / 3.37	0.254 / 3.05	0.300 / 3.60
E-125	0.362 / 4.34	0.336 / 4.03	0.330 / 3.96	0.270 / 3.24	0.245 / 2.94
E-126	0.556 / 6.67	0.524 / 6.29	0.508 / 6.10	0.464 / 5.57	0.477 / 5.72
E-127	0.464 / 5.57	0.435 / 5.22	0.464 / 5.57	0.494 / 5.93	0.480 / 5.76
E-128	0.468 / 5.62	0.461 / 5.53	0.496 / 5.95	0.474 / 5.69	0.459 / 5.51
E-129	0.389 / 4.67	0.371 / 4.45	0.386 / 4.63	0.383 / 4.60	0.414 / 4.97
E-130	0.389 / 4.67	0.354 / 4.25	0.384 / 4.61	0.398 / 4.78	0.404 / 4.85
E-131	0.448 / 5.38	0.364 / 4.37	0.399 / 4.79	0.400 / 4.80	0.410 / 4.92
E-132	0.404 / 4.85	0.377 / 4.52	0.404 / 4.85	0.353 / 4.24	0.389 / 4.67
	54.04	50.91	53.07	50.33	50.86

4.7

SUBJECT ELEVATION SURVEY
SECTION U-23
STATION 199+90 TO 204+90

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. / DATE.
BY: DJ GREENHARDT PAGE 63 OF

LAYER PERMEABLE ASPHALT TREATED BASE

	1	2	3	4	5
E-122	1.392	1.456	1.496	1.548	1.622
E-123	1.796	1.850	1.889	1.944	2.024
E-124	2.199	2.282	2.346	2.390	2.482
E-125	2.738	2.812	2.868	2.930	3.018
E-126	3.322	3.388	3.448	3.498	3.593
E-127	3.956	4.025	4.090	4.152	4.243
E-128	4.629	4.668	4.739	4.824	4.908
E-129	5.327	5.394	5.462	5.522	5.598
E-130	5.978	6.016	6.128	6.188	6.250
E-131	6.661	6.739	6.807	6.863	6.950
E-132	7.343	7.407	7.462	7.531	7.615

SUBJECT: ELEVATION SURVEY
SECTION U-23
STATION 199+90 TO 204+90

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO / DATE
BY: [illegible] PAGE 64 OF

LAYER PATB TO BASE

	1	2	3	4	5
E-122	0.362 / 4.34	0.370 / 4.44	0.354 / 4.25	0.346 / 4.15	0.356 / 4.27
E-123	0.365 / 4.38	0.363 / 4.36	0.340 / 4.08	0.337 / 4.04	0.346 / 4.15
E-124	0.352 / 4.22	0.364 / 4.37	0.352 / 4.22	0.354 / 4.25	0.376 / 4.51
E-125	0.360 / 4.32	0.373 / 4.48	0.362 / 4.34	0.362 / 4.34	0.379 / 4.55
E-126	0.344 / 4.13	0.358 / 4.30	0.346 / 4.15	0.335 / 4.02	0.351 / 4.21
E-127	0.345 / 4.14	0.365 / 4.38	0.362 / 4.34	0.344 / 4.13	0.371 / 4.45
E-128	0.367 / 4.40	0.335 / 4.02	0.323 / 3.88	0.340 / 4.08	0.354 / 4.25
E-129	0.351 / 4.21	0.375 / 4.50	0.376 / 4.51	0.366 / 4.39	0.364 / 4.37
E-130	0.337 / 4.04	0.360 / 4.32	0.374 / 4.49	0.366 / 4.39	0.358 / 4.30
E-131	0.267 / 3.20	0.297 / 3.56	0.299 / 3.59	0.307 / 3.68	0.318 / 3.82
E-132	0.297 / 3.56	0.303 / 3.70	0.288 / 3.46	0.320 / 3.84	0.334 / 4.01
	44.94	46.43	45.31	45.31	46.89

4.2

42443

SUBJECT ELEVATION SURVEY
SECTION U-23
STATION 199+90 TO 201+40

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. / DATE /
BY. [illegible] PAGE 65 OF

LAYER CONCRETE PAVEMENT

	1	2	3	4	5
E-122	2.356	2.422	2.486	2.536	2.602
E-123	2.751	2.804	2.857	2.917	2.994
E-124	3.205	3.266	3.323	3.380	3.458
E-125	3.722	3.780	3.842	3.896	3.970
E-126	4.328	4.391	4.452	4.502	4.570
E-127	4.947	5.012	5.076	5.123	5.194
E-128	5.620	5.676	5.747	5.790	5.870
E-129	6.289	6.348	6.408	6.460	6.536
E-130	6.959	7.012	7.078	7.125	7.200
E-131	7.685	7.740	7.802	7.860	7.920
E-132	8.356	8.407	8.463	8.514	8.572

SUBJECT: ELEVATION SURVEY
SECTION 0-23
STATION 199+90 + 204+90

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. / DATE
BY. [illegible] PAGE 66 OF

LAYER CONCRETE 10 PATB

	1	2	3	4	5
E-122	0.964 / 11.57	0.972 / 11.66	0.990 / 11.88	0.988 / 11.86	0.930 / 11.16
E-123	0.955 / 11.46	0.954 / 11.45	0.968 / 11.62	0.973 / 11.68	0.970 / 11.64
E-124	1.006 / 12.07	0.984 / 11.81	0.977 / 11.72	0.990 / 11.88	0.976 / 11.71
E-125	0.984 / 11.81	0.968 / 11.62	0.974 / 11.69	0.966 / 11.59	0.952 / 11.42
E-126	1.006 / 12.07	1.003 / 12.04	1.004 / 12.05	1.004 / 12.05	0.977 / 11.72
E-127	0.991 / 11.89	0.987 / 11.84	0.986 / 11.83	0.971 / 11.65	0.951 / 11.41
E-128	0.991 / 11.89	1.008 / 12.10	1.008 / 12.10	0.966 / 11.59	0.962 / 11.54
E-129	0.962 / 11.54	0.954 / 11.45	0.946 / 11.35	0.938 / 11.26	0.938 / 11.26
E-130	0.981 / 11.77	0.966 / 11.59	0.950 / 11.40	0.937 / 11.24	0.950 / 11.40
E-131	1.024 / 12.29	1.001 / 12.01	0.995 / 11.94	0.997 / 11.96	0.970 / 11.64
E-132	1.013 / 12.16	1.000 / 12	1.006 / 12.07	0.983 / 11.80	0.957 / 11.48
	130.52	129.57	129.65	128.56	126.38

11.7

46452

SUBJECT ELEVATION SURVEY
SECTION U-24
STATION 169+90 to 174+90

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL
AND MATERIALS ENGINEERS

JOB NO.: DATE
BY Norm Lebove PAGE 4/1 OF

LAYER Subgrade

	1	2	3	4	5
E-89	0.128	0.310	0.411	0.557	0.629
E-90	1.632	1.884	1.994	2.100	2.214
E-91	2.766	2.947	3.096	3.174	3.219
E-92	3.066	3.110	3.157	3.228	3.292
E-93	3.072	3.174	3.196	3.208	3.254
E-94	3.060	3.183	3.237	3.316	3.376
E-95	3.478	3.614	3.682	3.686	3.779
E-96	3.331	3.419	3.489	3.464	3.556
E-97	2.174	2.305	2.373	2.282	2.501
E-98	0.402	0.458	0.606	0.688	0.764
E-99	0.132	0.286	0.387	0.519	0.666

SUBJECT ELEVATION SURVEY
SECTION U-24
STATION 169+90 TO 174+90

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO ____ DATE ____
BY [illegible] PAGE 42 OF ____

LAYER BASE COURSE

	1	2	3	4	5
E-89	0.552	0.637	0.706	0.779	0.843
E-90	2.034	2.140	2.204	2.272	2.332
E-91	3.176	3.246	3.275	3.371	3.420
E-92	3.346	3.448	3.542	3.592	3.593
E-93	3.358	3.444	3.485	3.565	3.593
E-94	3.414	3.486	3.546	3.621	3.661
E-95	3.749	3.879	3.932	4.001	4.057
E-96	3.510	3.637	3.691	3.765	3.832
E-97	2.284	2.464	2.542	2.620	2.704
E-98	0.496	0.708	0.806	0.934	1.043
E-99	0.242	0.462	0.574	0.722	0.857

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

SUBJECT ELEVATION SURVEY
SECTION U-24
STATION 169+90 TO 174+90
~~BASE COURSE~~

JOB NO / DATE /
BY AJ... PAGE 4/3 OF

LAYER ~~BATB~~ TO SUBGRADE

	1	2	3	4	5
E-89	0.424 / 5.09	0.327 / 3.92	0.295 / 3.54	0.222 / 2.66	0.214 / 2.57
E-90	0.402 / 4.82	0.256 / 3.07	0.210 / 2.52	0.172 / 2.06	0.118 / 1.42
E-91	0.410 / 4.92	0.299 / 3.59	0.179 / 2.15	0.198 / 2.38	0.201 / 2.41
E-92	0.340 / 4.08	0.338 / 4.06	0.385 / 4.62	0.364 / 4.37	0.301 / 3.61
E-93	0.286 / 3.43	0.270 / 3.24	0.289 / 3.47	0.357 / 4.28	0.339 / 4.07
E-94	0.354 / 4.25	0.305 / 3.66	0.309 / 3.71	0.311 / 3.73	0.285 / 3.42
E-95	0.271 / 3.25	0.265 / 3.18	0.250 / 3.00	0.315 / 3.78	0.278 / 3.34
E-96	0.179 / 2.15	0.218 / 2.62	0.202 / 2.42	0.301 / 3.61	0.282 / 3.38
E-97	0.110 / 1.32	0.161 / 1.93	0.169 / 2.03	0.338 / 4.06	0.203 / 2.44
E-98	0.094 / 1.13	0.250 / 3.00	0.200 / 2.40	0.246 / 2.95	0.279 / 3.35
E-99	0.110 / 1.32	0.176 / 2.11	0.187 / 2.24	0.203 / 2.44	0.185 / 2.22
	35.76	34.38	32.1	36.32	32.23

3.1

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SUBJECT ELEVATION SURVEY
SECTION U-24
STATION 169+90 TO 174+90

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL
AND MATERIALS ENGINEERS

JOB NO. ______ DATE ______
BY DJGREENLEAF PAGE 44 OF ______

LAYER PERMEABLE ASPHALT TREATED BASE

	1	2	3	4	5
E-89	0.905	1.030	1.100	1.188	1.266
E-90	2.402	2.523	2.598	2.652	2.734
E-91	3.539	3.652	3.710	3.793	3.864
E-92	3.719	3.834	3.896	3.969	4.042
E-93	3.721	3.830	3.886	3.951	4.030
E-94	3.757	3.892	3.946	4.011	4.094
E-95	4.115	4.264	4.320	4.401	4.496
E-96	3.878	4.015	4.074	4.156	4.260
E-97	2.671	2.846	2.932	3.020	3.142
E-98	0.892	1.018	1.134	1.274	1.422
E-99	0.654	0.811	0.926	1.080	1.222

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SUBJECT ELEVATION SURVEY
SECTION U - 24
STATION 169+90 TO 174+90

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. ____ DATE ____
BY AJ Greenhouse PAGE 45 OF ____

LAYER ~~PATB TO BASE COURSE~~

	1	2	3	4	5
E-89	0.353 / 4.24	0.~~391~~ .393 / ~~4.99~~ 4.72	0.394 / 4.73	0.409 / 4.91	0.423 / 5.08
E-90	0.368 / 4.42	0.383 / 4.60	0.384 / 4.61	0.380 / 4.56	0.402 / 4.82
E-91	0.363 / 4.36	0.406 / 4.87	0.435 / 5.22	0.412 / 4.94	0.444 / 5.33
E-92	0.373 / 4.48	0.386 / 4.63	0.354 / 4.25	0.377 / 4.52	0.449 / 5.39
E-93	0.363 / 4.36	0.386 / 4.63	0.401 / 4.81	0.386 / 4.63	0.437 / 5.24
E-94	0.343 / 4.12	0.404 / 4.85	0.400 / 4.80	0.390 / 4.68	0.433 / 5.20
E-95	0.366 / 4.39	0.385 / 4.62	0.388 / 4.66	0.400 / 4.80	0.439 / 5.27
E-96	0.368 / 4.42	0.378 / 4.54	0.383 / 4.60	0.391 / 4.69	0.428 / 5.14
E-97	0.387 / 4.64	0.382 / 4.58	0.390 / 4.68	0.400 / 4.80	0.438 / 5.26
E-98	0.396 / 3.84	0.310 / 3.72	0.328 / 3.94	0.340 / 4.08	0.379 / 4.55
E-99	0.412 / 4.94	0.349 / 4.19	0.352 / 4.22	0.358 / 4.30	0.371 / 4.45
	48.21	49.95	50.52	50.91	55.73

4.6

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

SUBJECT ELEVATION SURVEY
SECTION U-24
STATION 169+90 TO 174+90

JOB NO ______ DATE ______
BY [illegible] PAGE 46 OF ______

LAYER Concrete Pavement

	1	2	3	4	5
E-89	1.880	1.974	2.035	2.090	2.154
E-90	3.376	3.469	3.526	3.580	3.645
E-91	4.489	4.585	4.646	4.698	4.768
E-92	4.713	4.813	4.874	4.930	4.991
E-93	4.681	4.774	4.835	4.886	4.948
E-94	4.699	4.794	4.852	4.902	4.963
E-95	5.030	5.122	5.172	5.247	5.315
E-96	4.787	4.888	4.956	5.013	5.076
E-97	3.630	3.754	3.834	3.910	3.987
E-98	1.963	2.110	2.214	2.312	2.401
E-99	1.730	1.900	2.018	2.122	2.224

SUBJECT ELEVATION SURVEY
SECTION U-24
STATION 169+90 to 174+90

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO ____ DATE ____
BY A Jaramillo PAGE 47 OF ____

LAYER Conc to PATB

	1	2	3	4	5
E-89	0.975 / 11.70	0.944 / 11.33	0.935 / 11.22	0.902 / 10.82	0.888 / 10.66
E-90	0.974 / 11.69	0.946 / 11.35	0.938 / 11.26	0.928 / 11.14	0.911 / 10.93
E-91	0.950 / 11.40	0.933 / 11.20	0.936 / 11.23	0.915 / 10.98	0.904 / 10.85
E-92	0.994 / 11.93	0.979 / 11.75	0.978 / 11.74	0.961 / 11.53	0.949 / 11.39
E-93	0.960 / 11.52	0.944 / 11.33	0.949 / 11.39	0.935 / 11.22	0.918 / 11.02
E-94	0.942 / 11.30	0.902 / 10.82	0.906 / 10.87	0.891 / 10.69	0.869 / 10.43
E-95	0.915 / 10.98	0.858 / 10.30	0.852 / 10.22	0.846 / 10.15	0.819 / 9.83
E-96	0.909 / 10.91	0.873 / 10.48	0.882 / 10.58	0.857 / 10.28	0.816 / 9.79
E-97	0.959 / 11.51	0.890 / 10.68	0.902 / 10.82	0.890 / 10.68	0.845 / 10.14
E-98	1.077 / 12.85	1.092 / 13.10	1.080 / 12.96	1.038 / 12.46	0.979 / 11.75
E-99	1.076 / 12.91	1.089 / 13.07	1.092 / 13.10	1.042 / 12.50	1.002 / 12.02
	128.702	125.41	125.39	122.45	118 81

11.3

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SUBJECT ELEVATION SURVEY
SECTION U-5359
STATION 222+00 TO 227+00

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO. / DATE
BY [illegible] PAGE 67 OF

LAYER SUBGRADE

	1	2	3	4	5
E-133	0.119	0.190	0.238	0.320	0.331
E-134	0.798	0.850	0.907	0.974	1.028
E-135	1.456	1.509	1.558	1.656	1.676
E-136	2.025	2.098	2.160	2.248	2.279
E-137	2.611	2.666	2.711	2.785	2.838
E-138	3.130	3.198	3.248	3.288	3.341
E-139	3.611	3.680	3.733	3.829	3.856
E-140	4.036	4.096	4.152	4.220	4.280
E-141	4.445	4.512	4.580	4.637	4.682
E-142	4.731	4.788	4.865	4.917	4.961
E-143	5.023	5.141	5.194	5.258	5.314

5E2P59

SUBJECT ELEVATION SURVEY
SECTION U-53
STATION 222+00 TO 227+80

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO: / DATE
BY [illegible] PAGE 68 OF

LAYER Concrete Pavement

	1	2	3	4	5
E-133	1.120	1.178	1.240	1.295	1.358
E-134	1.773	1.830	1.894	1.946	2.014
E-135	2.420	2.478	2.538	2.592	2.658
E-136	3.031	3.093	3.166	3.208	3.277
E-137	3.593	3.652	3.718	3.773	3.837
E-138	4.103	4.157	4.225	4.282	4.343
E-139	4.561	4.624	4.688	4.744	4.803
E-140	5.010	5.061	5.131	5.197	5.251
E-141	5.410	5.454	5.529	5.592	5.642
E-142	5.752	5.808	5.880	5.934	5.792
E-143	6.047	6.096	6.163	6.222	6.281

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SUBJECT ELEVATION SURVEY
SECTION U-589
STATION 222+00 TO 227+00

CTL/THOMPSON, INC.
CONSULTING GEOTECHNICAL AND MATERIALS ENGINEERS

JOB NO ______ DATE ______
BY [illegible] PAGE 69 OF ______

LAYER Comp to Subgrade

	1	2	3	4	5
E-133	1.001 / 12.01	0.993 / 11.96	1.002 / 12.02	0.975 / 11.70	0.977 / 11.72
E-134	0.975 / 11.70	0.980 / 11.76	0.987 / 11.84	0.972 / 11.71	0.986 / 11.83
E-135	0.964 / 11.57	0.969 / 11.63	0.980 / 11.76	0.936 / 11.23	0.982 / 11.78
E-136	1.006 / 12.07	0.995 / 11.94	0.996 / 11.95	0.960 / 11.52	0.998 / 11.98
E-137	0.982 / 11.78	0.986 / 11.83	1.007 / 12.08	0.988 / 11.86	0.999 / 11.99
E-138	0.973 / 11.68	0.959 / 11.51	0.977 / 11.72	0.994 / 11.93	1.002 / 12.02
E-139	0.953 / 11.44	0.944 / 11.33	0.950 / 11.40	0.915 / 10.98	0.947 / 11.36
E-140	0.974 / 11.69	0.968 / 11.62	0.979 / 11.75	0.967 / 11.60	0.971 / 11.65
E-141	0.962 / 11.54	0.952 / 11.42	0.949 / 11.39	0.945 / 11.34	0.960 / 11.52
E-142	1.021 / 12.25	1.020 / 12.24	1.017 / 12.20	1.017 / 12.20	1.031 / 12.37
E-143	1.021 / 12.25	0.955 / 11.46	0.974 / 11.69	0.964 / 11.57	0.967 / 11.60
	129.96	128.60	129.80	127.61	129.82

11.7

APPENDIX D

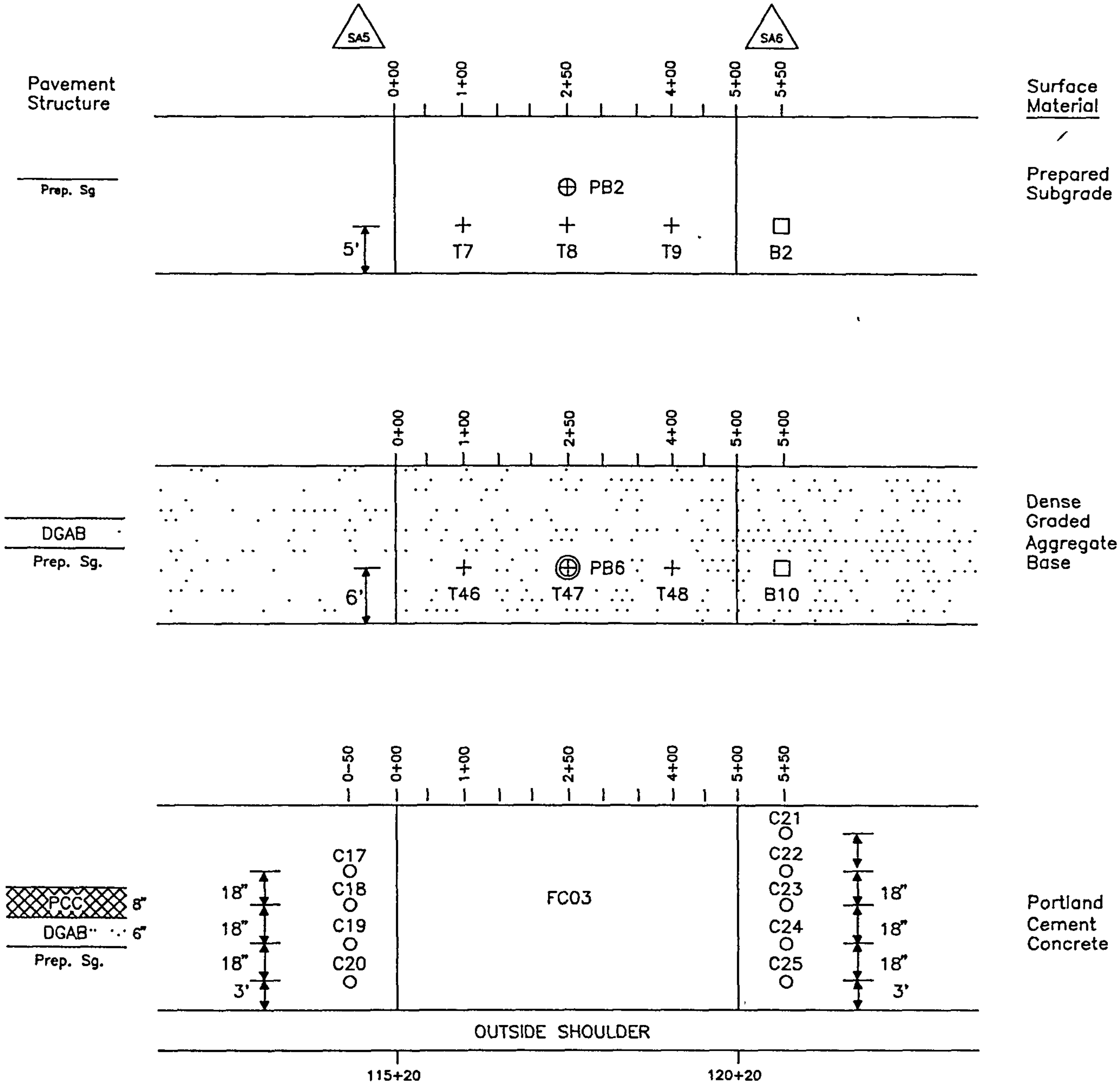
SAMPLING AREAS & FIELD TESTS CONDUCTED

Table Test section location table showing construction and project stations.

Test Section	Location	Construction Stationing	Test Section Stationing	SHRP Reference Project Station
U16	Begin	101+40	0-50	
	Begin Monitoring	101+90	0+00	0+00
	End Monitoring	106+90	5+00	5+00
	End	107+55	5+65	5+65
U13	Begin	108+15	0-50	6+25
	Begin Monitoring	108+65	0+00	6+75
	End Monitoring	113+65	5+00	11+75
	End	114+30	5+65	12+40
U14	Begin	115+20	0-50	13+30
	Begin Monitoring	115+70	0+00	13+80
	End Monitoring	120+70	5+00	18+80
	End	121+35	5+65	19+45
U15	Begin	121+95	0-65	20+05
	Begin Monitoring	122+65	0+00	20+70
	End Monitoring	127+65	5+00	25+70
	End	128+10	5+50	26+20
U18	Begin	140+75	0-50	32+10
	Begin Monitoring	141+40	0+00	32+60
	End Monitoring	146+40	5+00	37+60
	End	140+90	5+65	38+25
U19	Begin	149+45	0-65	38+85
	Begin Monitoring	149+95	0+00	39+50
	End Monitoring	154+95	5+00	44+50
	End	155+60	5+50	45+00
U17	Begin	155+90	0-65	54+00
	Begin Monitoring	156+55	0+00	54+65
	End Monitoring	161+55	5+00	59+65
	End	162+05	5+50	60+15
U20	Begin	162+65	0-65	60+75
	Begin Monitoring	163+30	0+00	61+40
	End Monitoring	168+30	5+00	66+40
	End	168+80	5+50	66+90

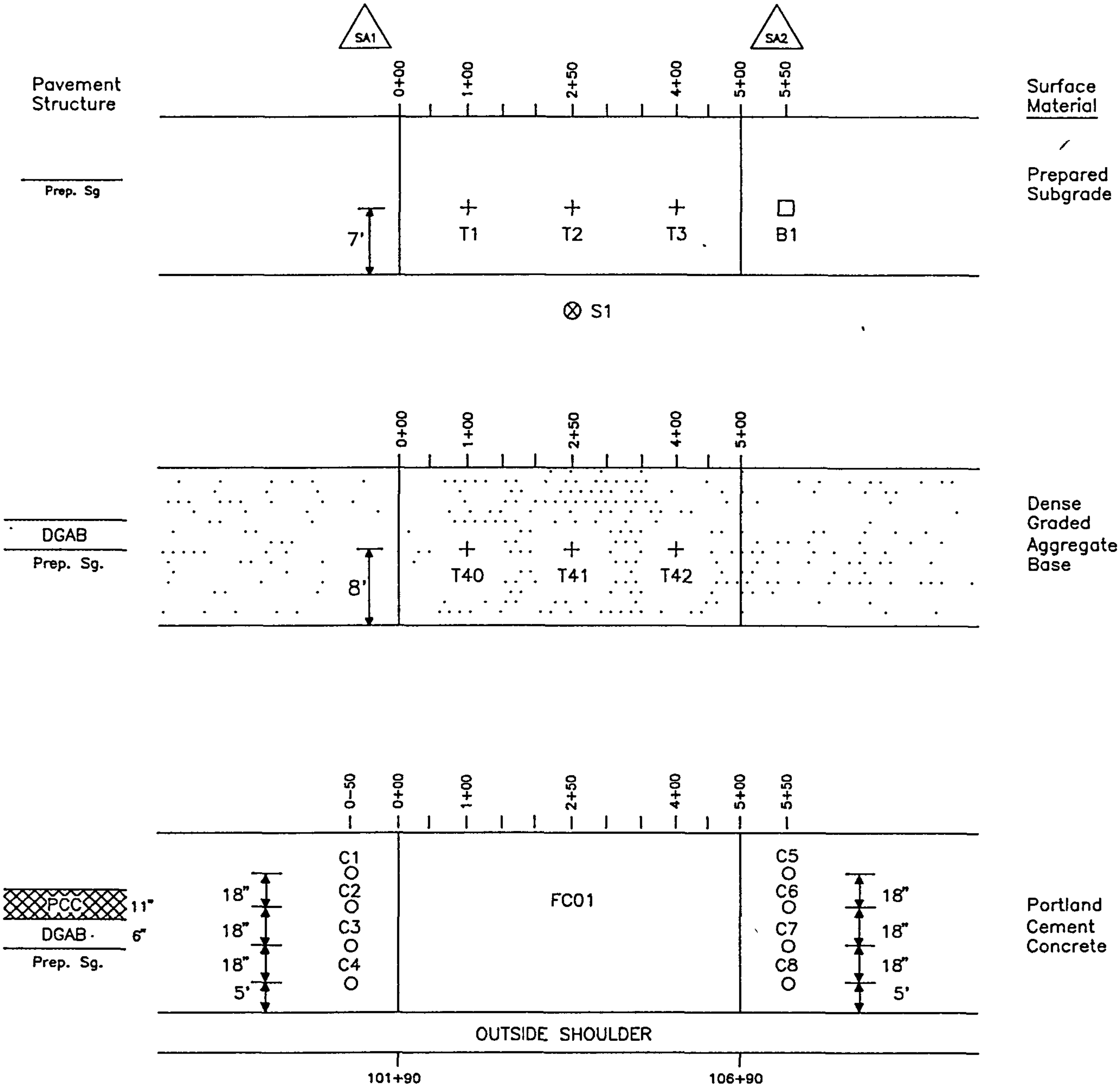
Table Test section location table showing construction and project stations (Contd.).

Test Section	Location	Construction Stationing	Test Section Stationing	SHRP Reference Project Station
U24	Begin	169+40	0-50	67+50
	Begin Monitoring	169+90	0+00	68+00
	End Monitoring	174+90	5+00	73+00
	End	175+55	5+65	73+65
U21	Begin	185+30	0-65	83+40
	Begin Monitoring	185+95	0+00	84+05
	End Monitoring	190+95	5+00	89+05
	End	191+45	5+50	89+55
U22	Begin	192+35	0-50	90+45
	Begin Monitoring	192+85	0+00	90+95
	End Monitoring	197+85	5+00	95+95
	End	198+50	5+65	96+60
U23	Begin	199+25	0-65	97+35
	Begin Monitoring	199+90	0+00	98+00
	End Monitoring	204+90	5+00	103+00
	End	205+40	5+50	103+50
59	Begin	221+10	0-90	119+20
	Begin Monitoring	222+00	0+00	120+10
	End Monitoring	227+00	5+00	125+10
	End	227+90	5+90	126+00



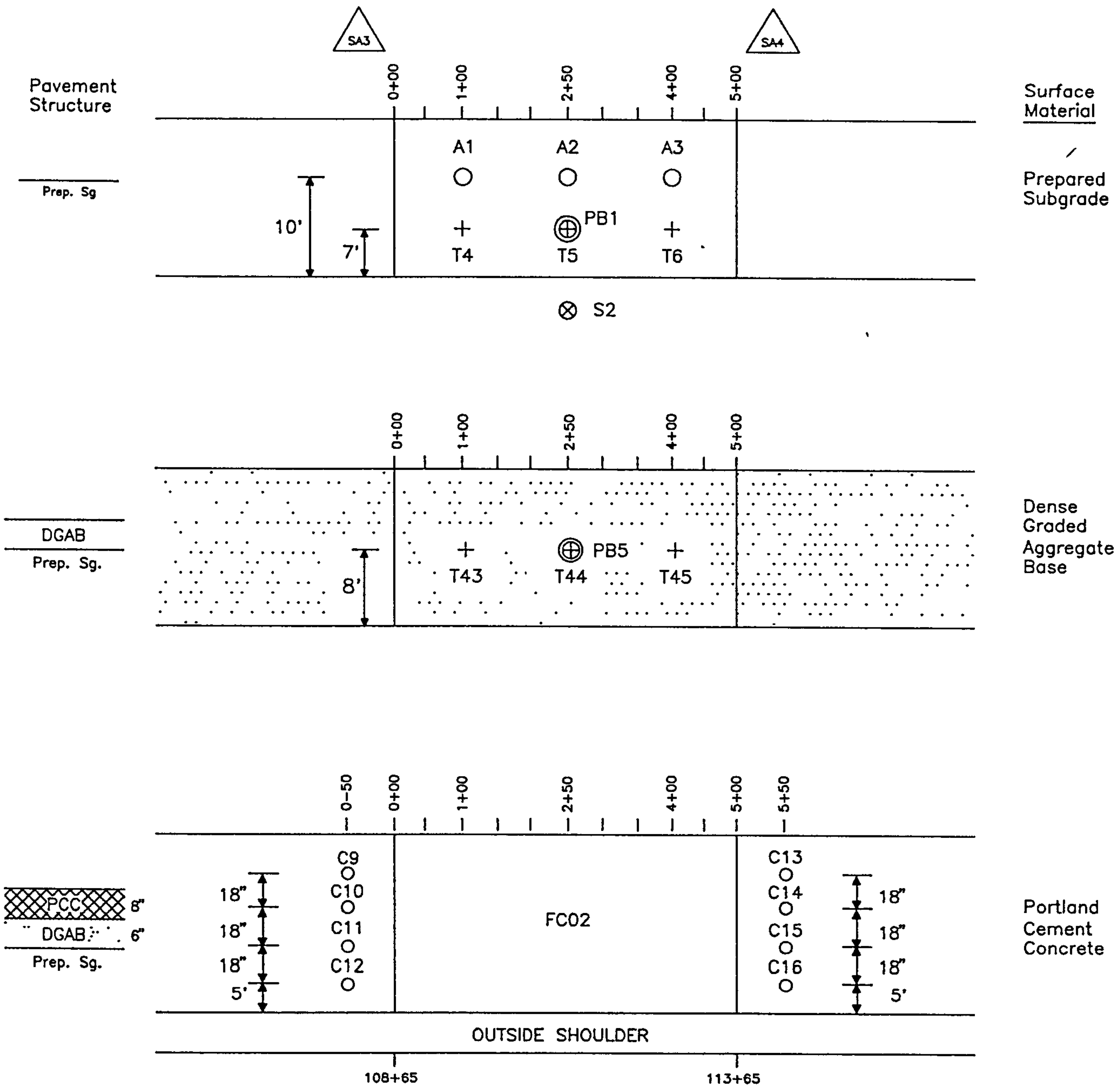
T7–T9 – Moisture-density tests on Subgrade
B2 – Bulk sampling of Subgrade
PB2 – Plate bearing test on Subgrade
T46–T48 – Moisture-density tests on DGAB
B10 – Bulk sample of DGAB
PB6 – Plate bearing test on DGAB
C17–C25 – Cores of PCC surface
FC03 – Bulk sampling of PCC for molded specimen

Figure ___. Sampling and test plan for test section U14.



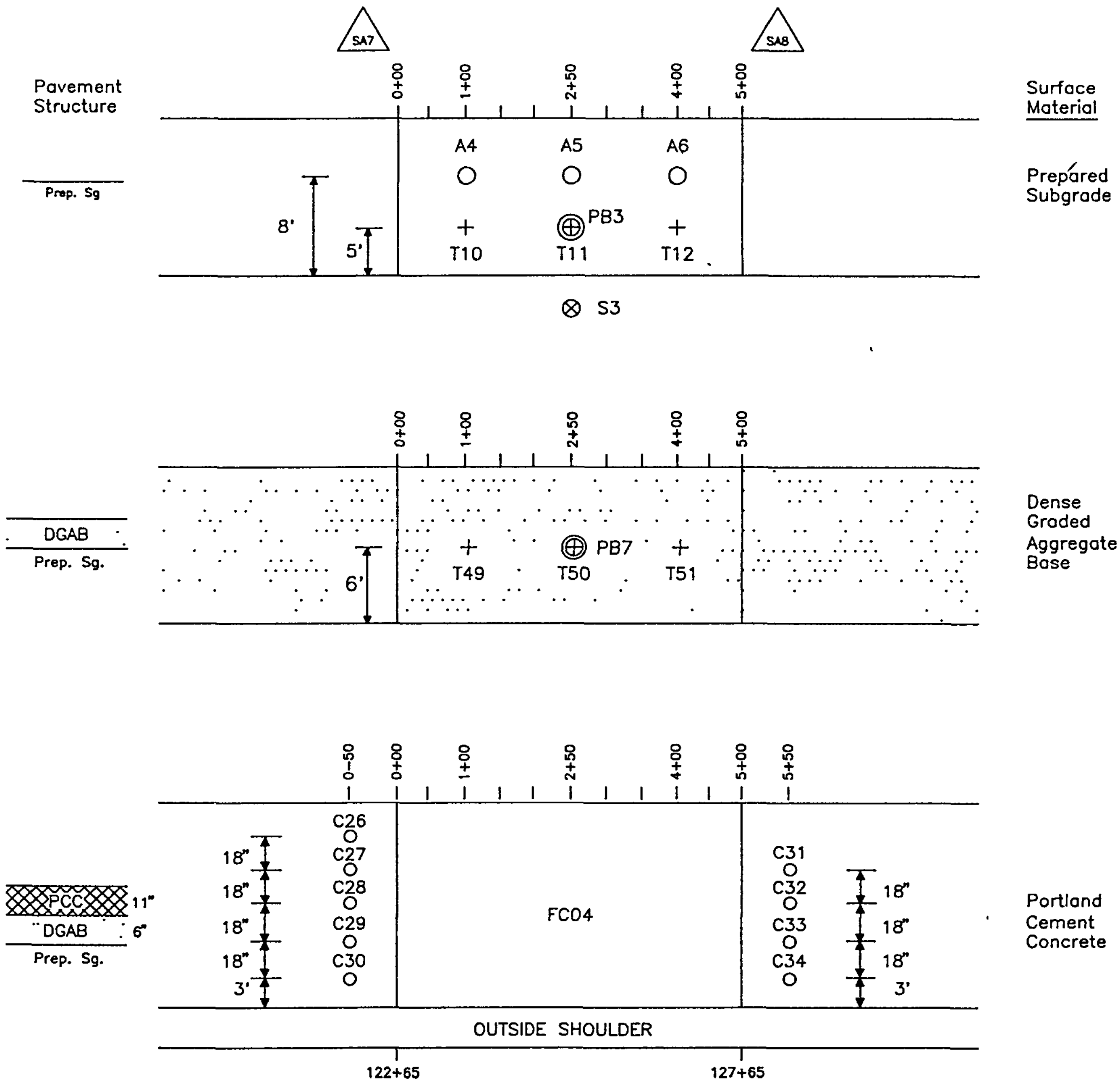
S1 – 20' shoulder probe
T1–T3 – Moisture–density tests on Subgrade
B1 – Bulk sampling of Subgrade
T40–T42 – Moisture–density tests on DGAB
C1–C8 – Cores of PCC surface
FC01 – Bulk sample of PCC for molded specimen

Figure ___. Sampling and test plan for test section U16.



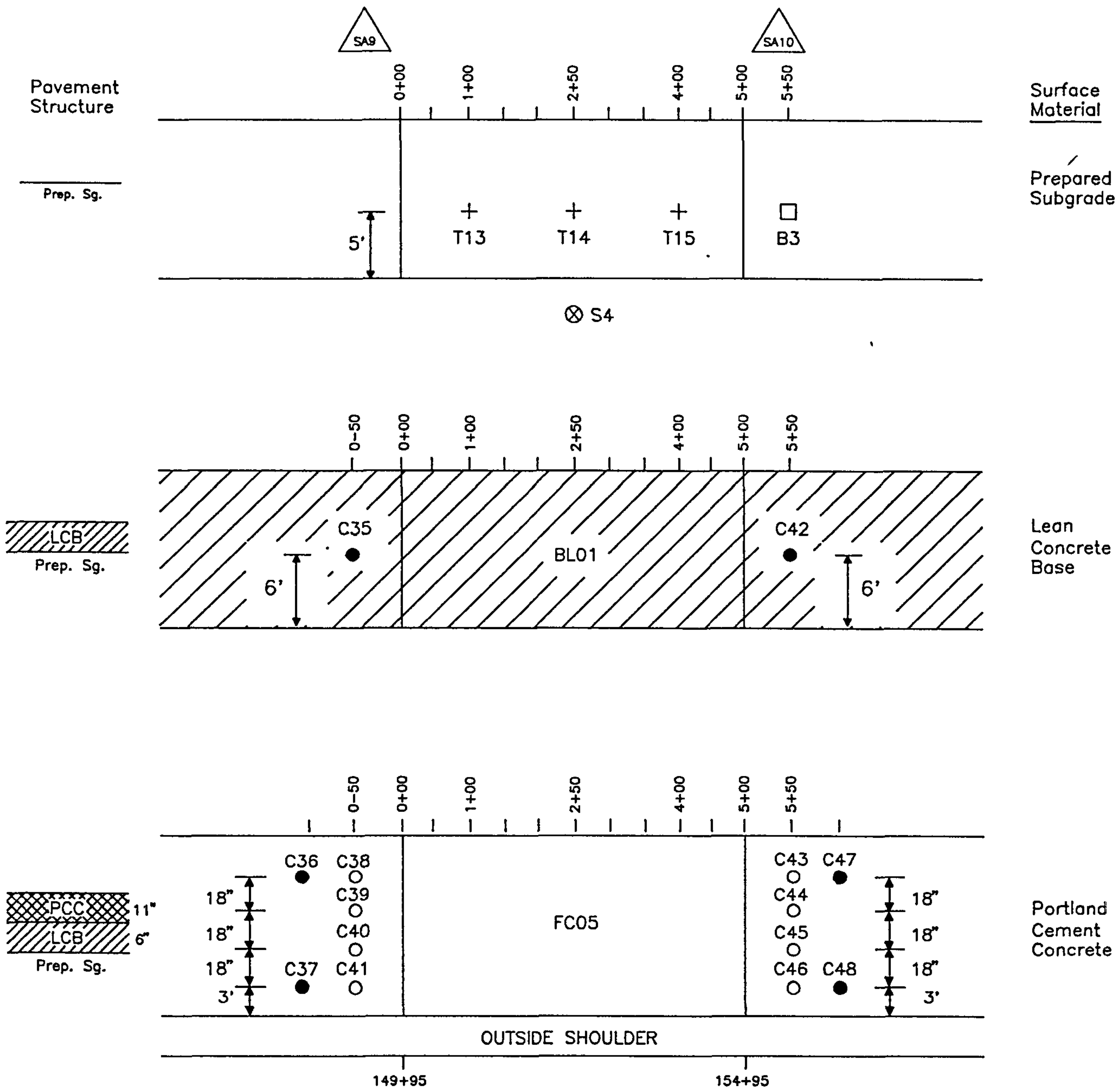
S2 – 20' shoulder probe
A1–A3 – Thinwall sampling of Subgrade
T4–T6 – Moisture–density tests on Subgrade
PB1 – Plate bearing test on Subgrade
PB5 – Plate bearing test on DGAB
C9–C16 – Cores of PCC surface
FC02 – Bulk sampling of PCC for molded specimen

Figure ___. Sampling and test plan for test section U13.



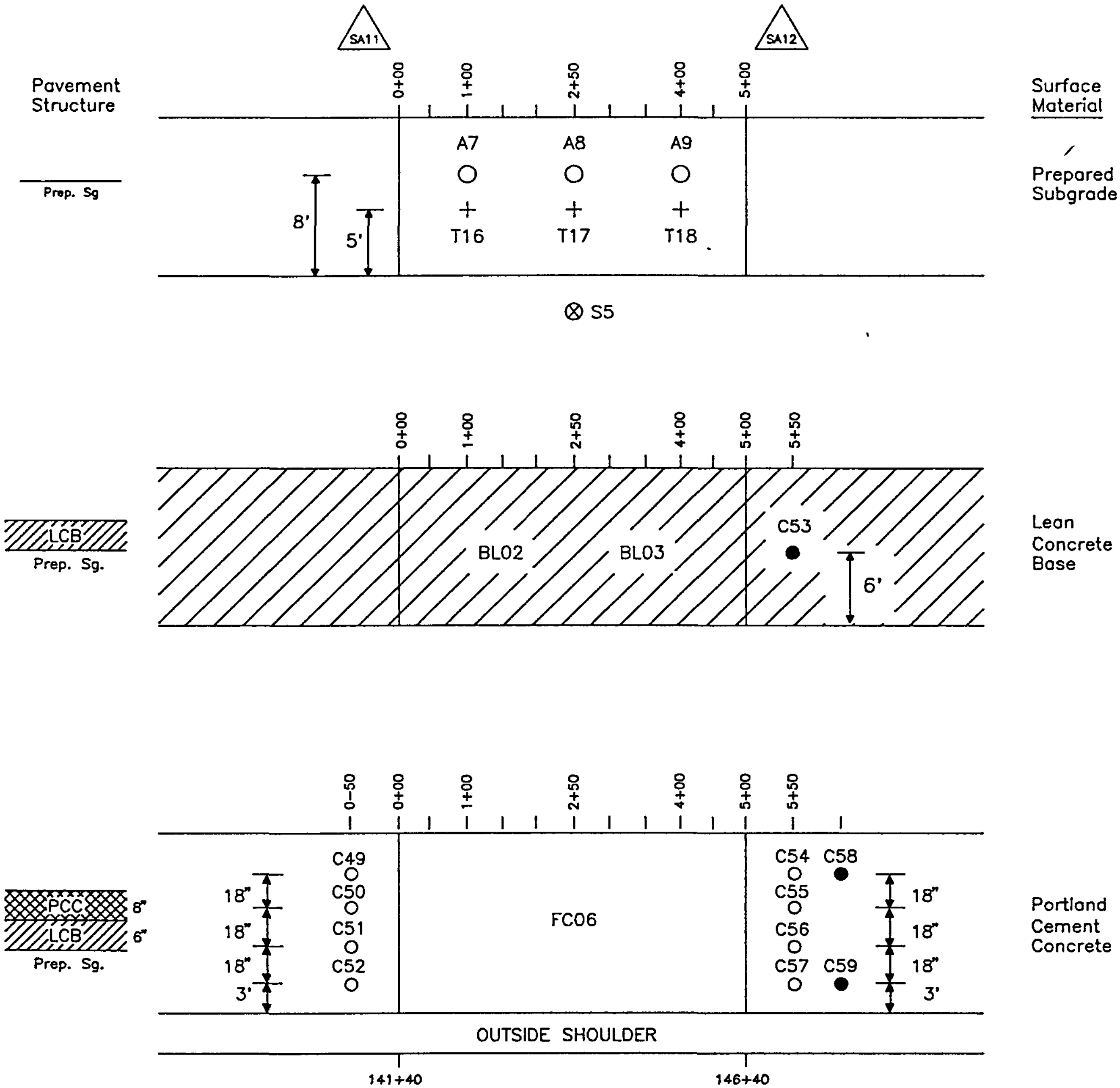
S3 – 20' shoulder probe
A4–A6 – Thinwall sampling of Subgrade
T10–T12 – Moisture–density tests on Subgrade
PB3 – Plate bearing test on Subgrade
T49–T51 – Moisture–density tests on DGAB
PB7 – Plate bearing test on DGAB
C26–C34 – Cores of PCC surface
FC04 – Bulk sample of PCC for molded specimen

Figure ___. Sampling and test plan for test section U15.



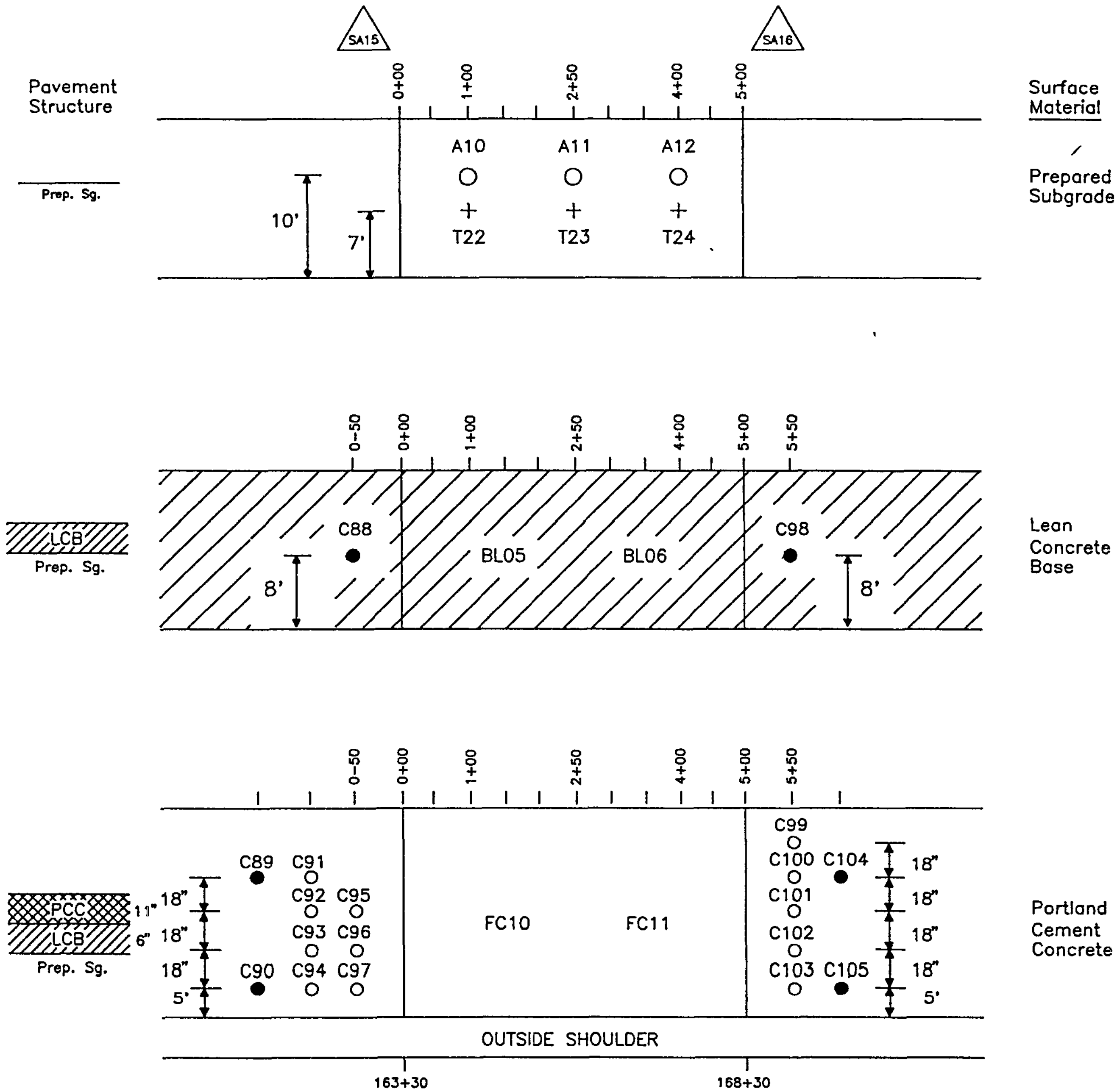
S4 – 20' shoulder probe
T13–T15 – Moisture–density tests on Subgrade
B2 – Bulk sampling of Subgrade
BL01 – Bulk sampling of LCB for molded specimen
C35, C42 – Cores of LCB
C36–C37, C47–C48 – Cores of PCC surface and LCB
C38–C41, C43–C46 – Cores of PCC surface
FC05 – Bulk sample of PCC for molded specimen

Figure ___. Sampling and test plan for test section U19.



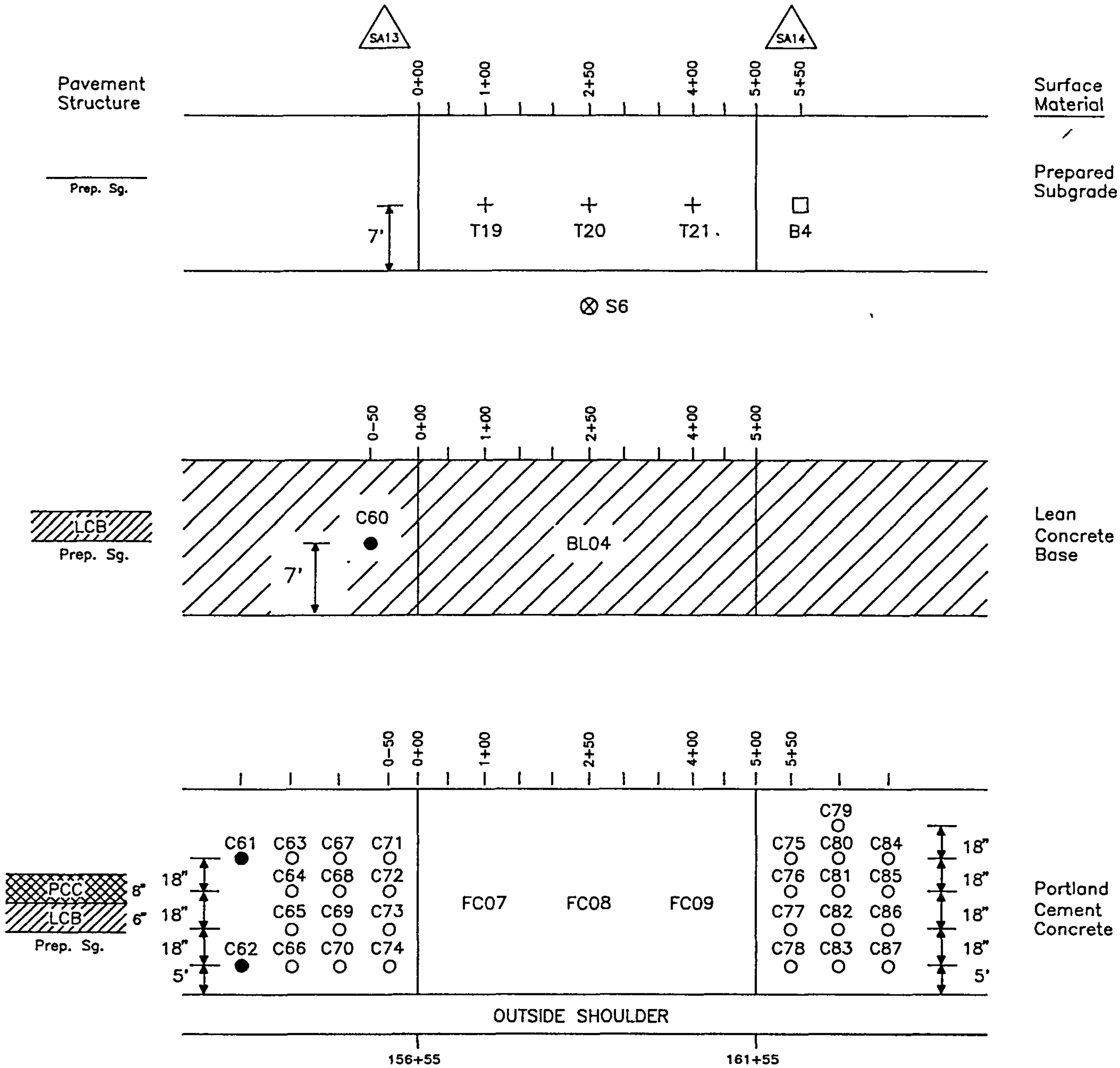
S5 – 20' shoulder probe
A7–A9 – Thinwalled tube samples of Subgrade
T16–T18 – Moisture-density tests on Subgrade
Bl02–BL03 – Bulk samples of LCB for molded specimen
C53 – Core of LCB
C58–C59 – Cores of PCC surface and LCB
C49–C52, C54–C57 – Cores of PCC surface layer
FC06 – Bulk sample of PCC for molded specimen

Figure ___. Sampling and test plan for test section U18.



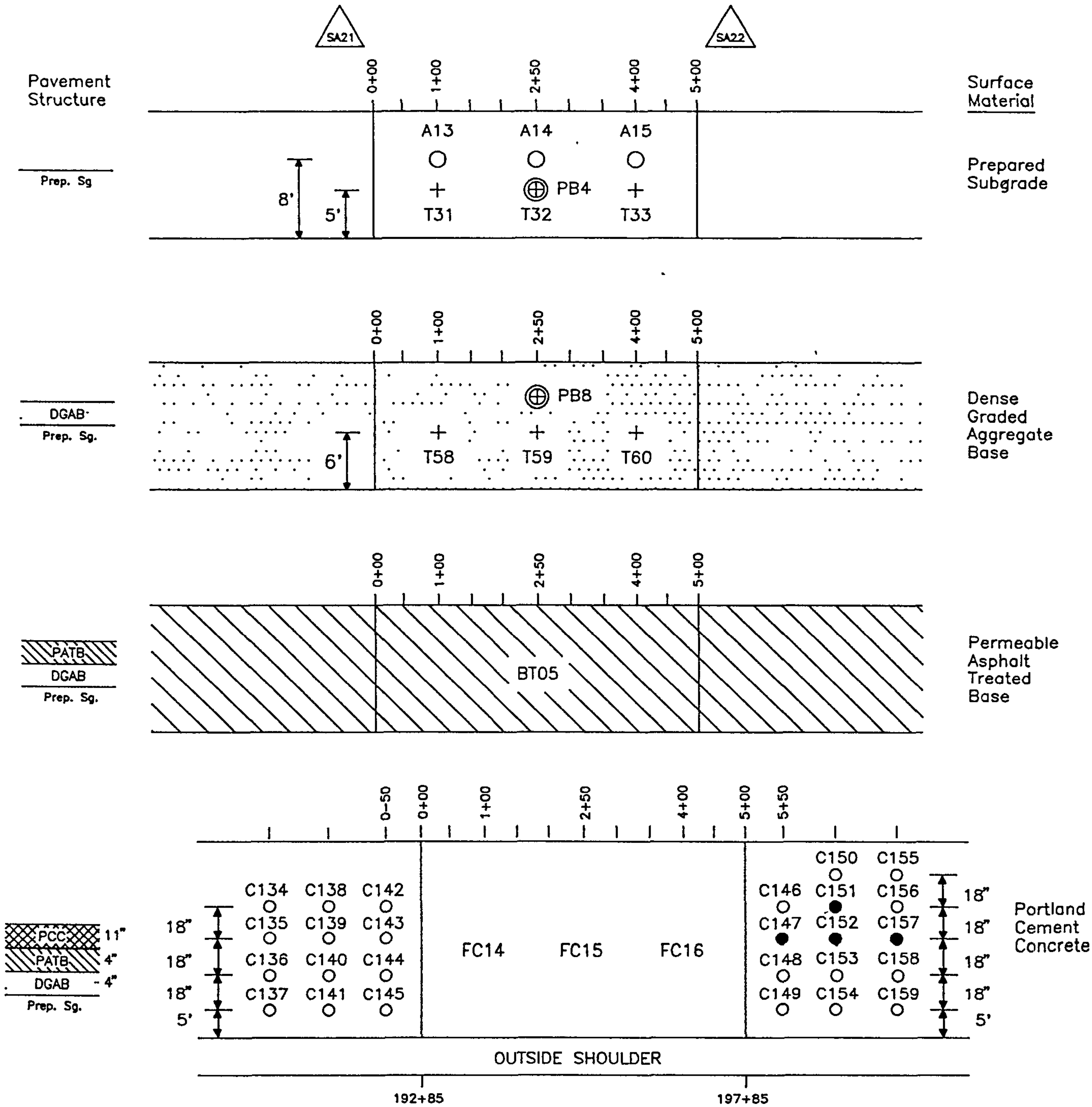
A10–A12 – Thinwall tube samples of Subgrade
T22–T24 – Moisture–density tests on Subgrade
BL05–BL06 – Bulk samples of LCB for molded specimen
C88, C98 – Cores of LCB
C89–C90, C104–C105 – Cores of PCC and LCB
C91–C97, C99–C103 – Cores of PCC surface layer
FC10–FC11 – Bulk samples of PCC for molded specimen

Figure ___. Sampling and test plan for test section U20.



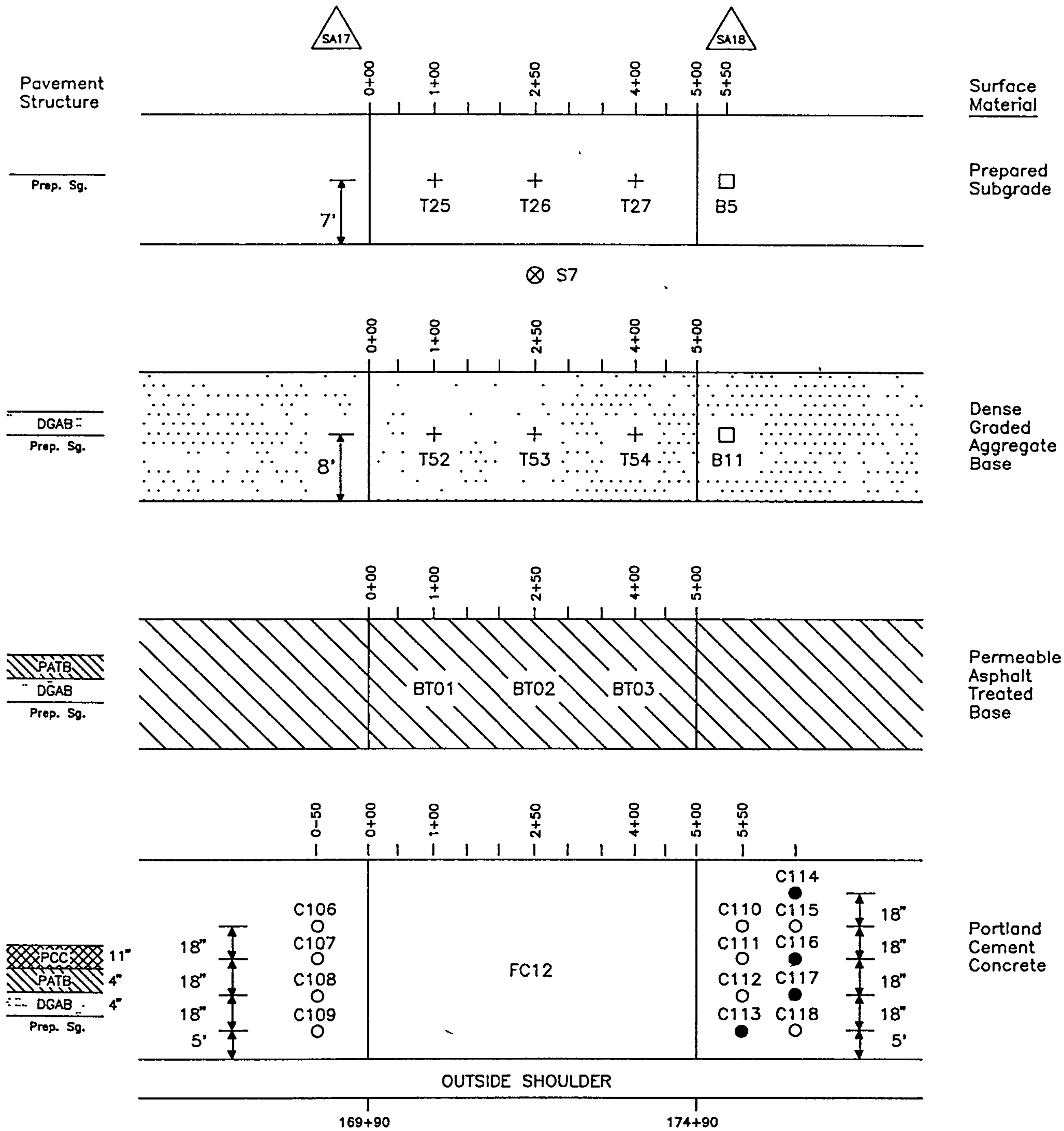
T19–T21 – Moisture-density tests on Subgrade
B4 – Bulk sampling of Subgrade
S6 – 20' shoulder probe
BL04 – Bulk sample of LCB for molded specimen
C60 – Cores of LCB
C61–C62 – Cores of PCC and LCB
C63–C87 – Cores of PCC surface layer
FC07–FC09 – Bulk sample of PCC for molded specimen

Figure __. Sampling and test plan for test section U17.



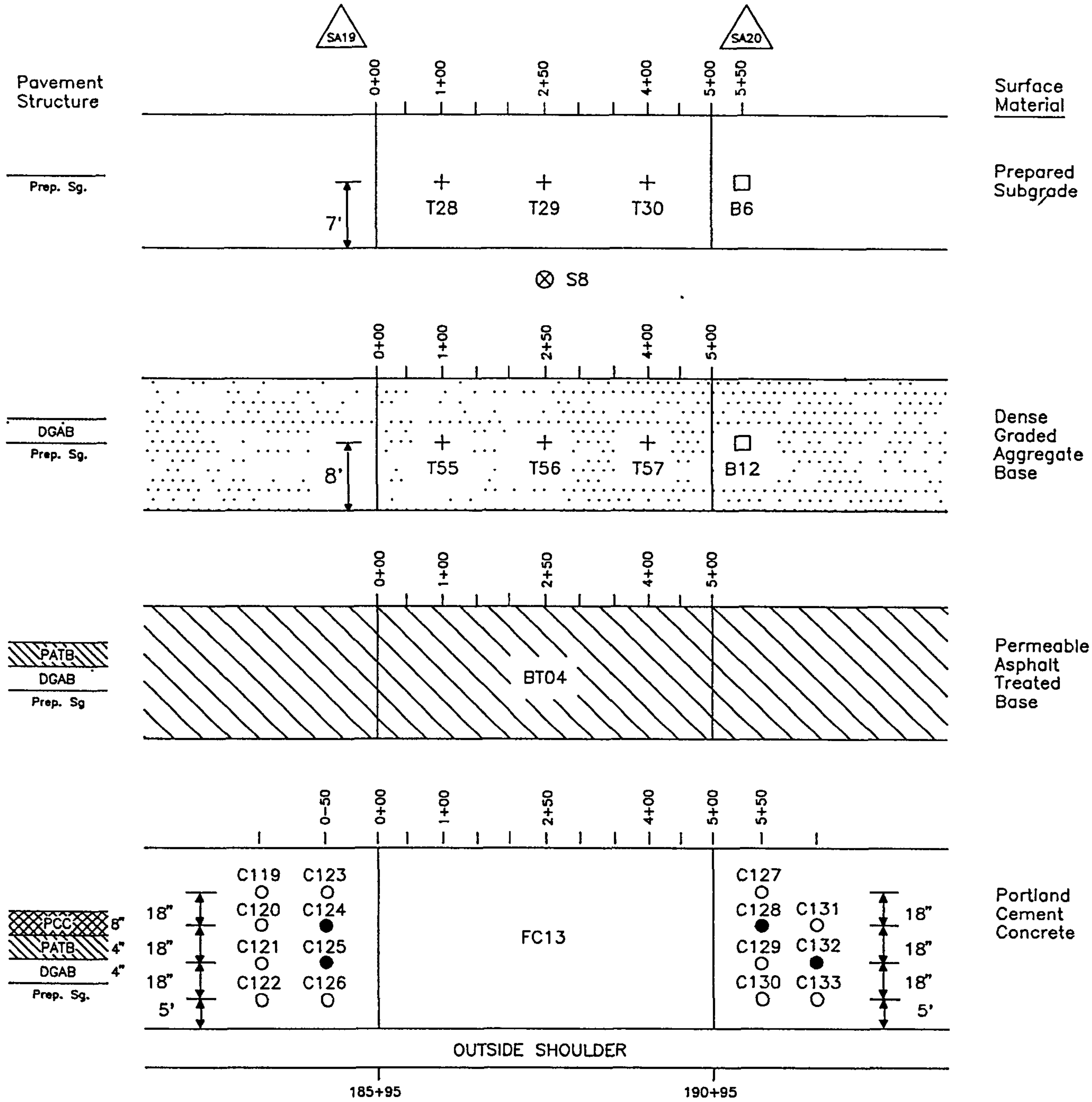
A13–A15 – Thinwall tube samples of Subgrade
T31–T33 – Moisture–density tests on Subgrade
PB4 – Plate bearing test on Subgrade
T58–T60 – Moisture–density tests on DGAB
PB8 – Plate bearing test on DGAB
BT05 – Bulk samples of PATB
C134–C146, C148–C150, C153–C156, C158–C159
– Cores of PCC surface
C147, C151–C152, C157 – Cores of PCC and PATB
FC14–FC16 – Bulk samples of PCC for molded specimen

Figure ___. Sampling and test plan for test section U22.



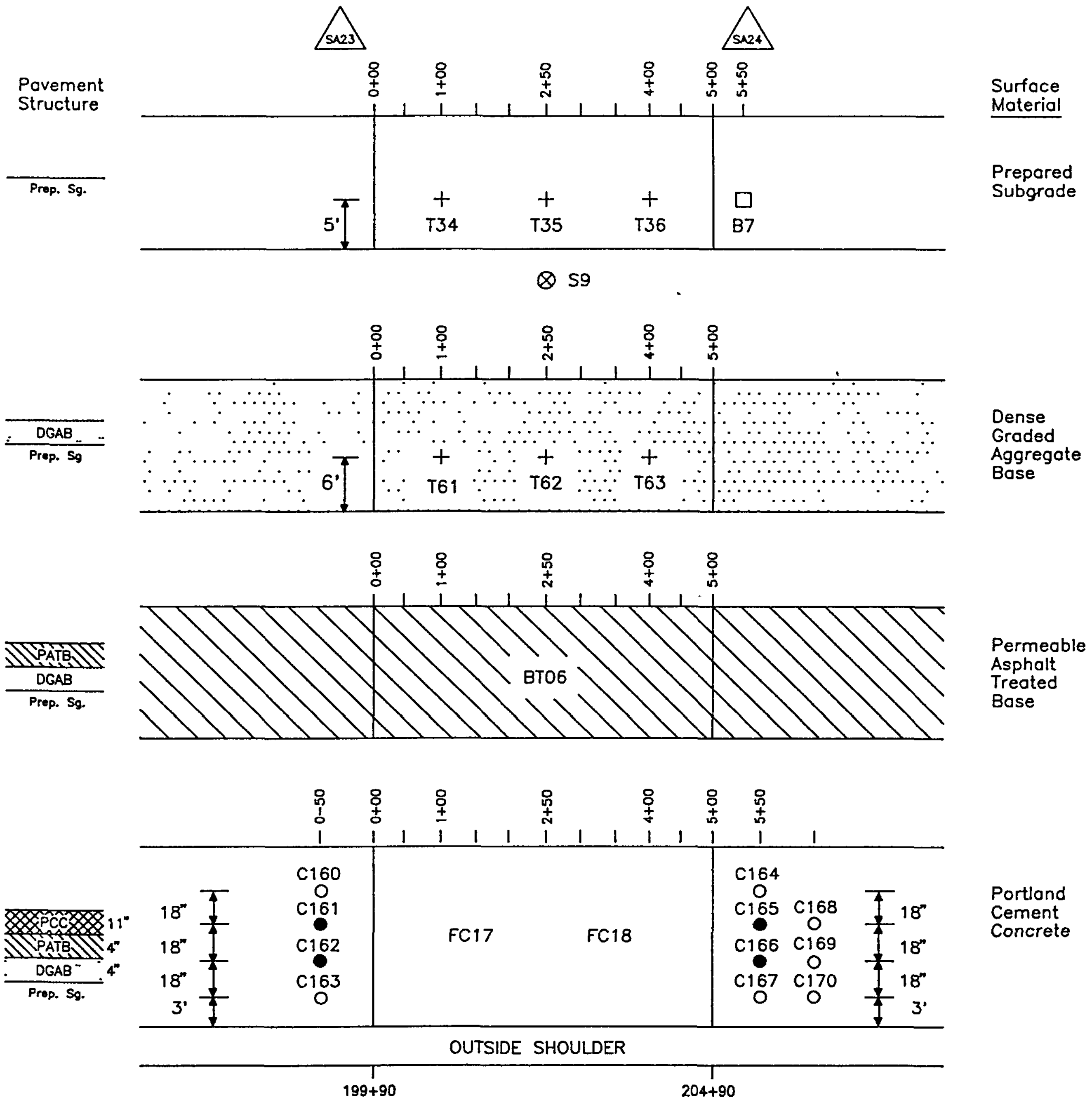
S7 – 20' shoulder probe
T25–T27 – Moisture–density tests on Subgrade
B5 – Bulk sample of Subgrade
T52–T54 – Moisture–density tests on DGAB
B11 – Bulk sample of DGAB
BT01–BT03 – Bulk sample of PATB
C106–C112, C116, C118 – Cores of PCC surface layer
C113–C114, C116–C117 – Cores of PCC and PATB
FC12 – Bulk samples of PCC for molded specimen

Figure ___. Sampling and test plan for test section U24.



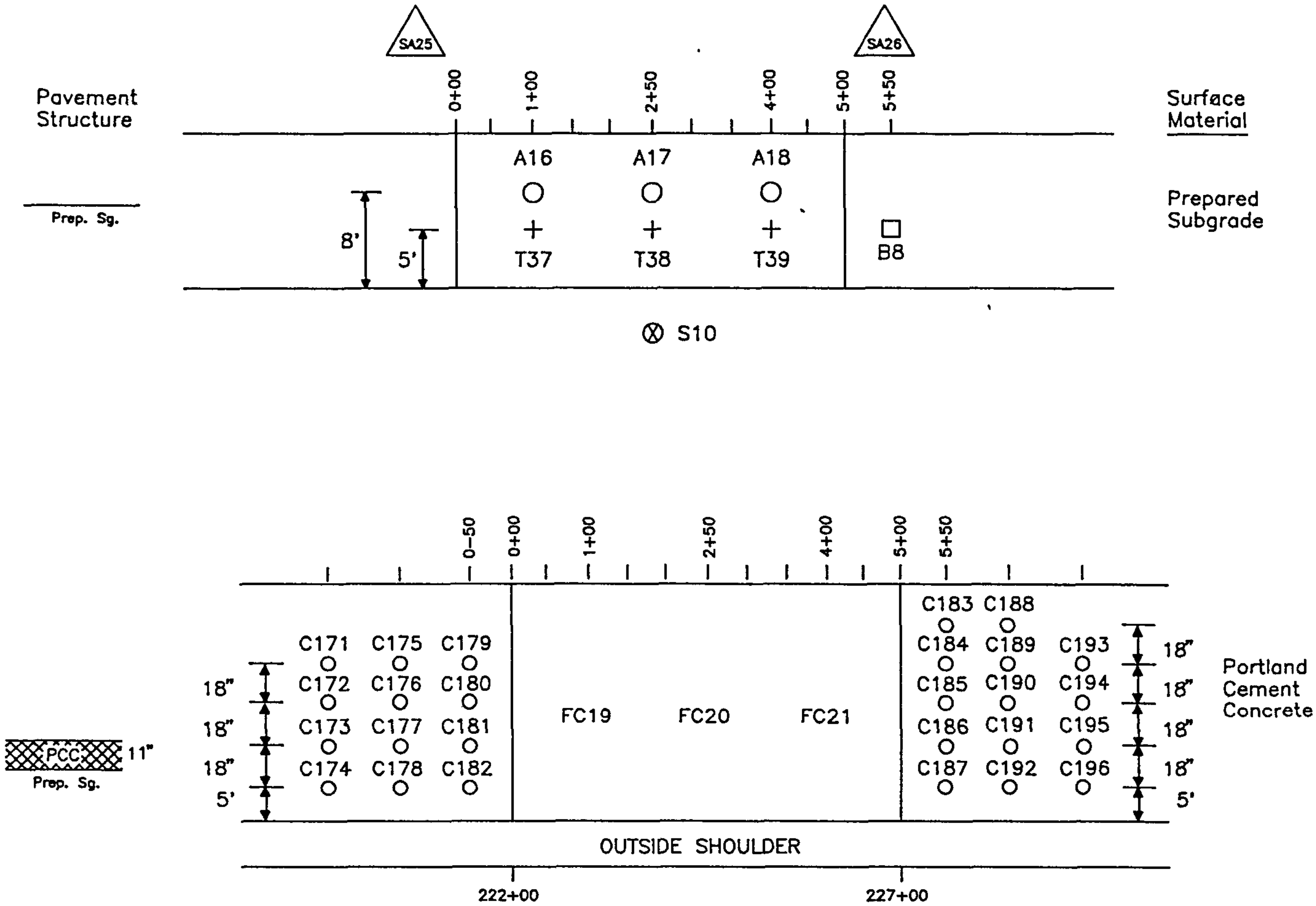
S8 – 20' shoulder probe
T28–T30 – Moisture–density test on Subgrade
B6 – Bulk sample of Subgrade
T55–T57 – Moisture–density tests on DGAB
B12 – Bulk sample of DGAB
BT04 – Bulk sample of PATB
C119–C123, C126–C127, C129–C131, C133
 – Cores of PCC surface layer
C124–C125, C128, C132 – Cores of PCC and PATB
FC13 – Bulk samples of PCC for molded specimen

Figure ___. Sampling and test plan for test section U21.



S9 – 20' shoulder probe
T34–T36 – Moisture–density test on Subgrade
B7 – Bulk sample of Subgrade
T61–T63 – Moisture–density tests on DGAB
BT06 – Bulk sample of PATB
C161–C162, C165–C166 – Cores of PCC and PATB
C160, C163–C164, C167–C170 – Cores of PCC surface
FC17–FC18 – Bulk sample of PCC for molded specimen

Figure ___. Sampling and test plan for test section U23.



S10 – 20' shoulder probe
A16–A18 – Thinwall tube samples of Subgrade
T37–T39 – Moisture–density tests on Subgrade
B8 – Bulk sample of Subgrade
C171–C196 – Cores of PCC surface
FC19–FC21 – Bulk samples of PCC for molded specimen

Figure ___. Sampling and test plan for test section U59.

APPENDIX E

CONSTRUCTION DATA SHEETS

February 1992

SPS-2 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

* 1.	LANE WIDTH (Feet)		[14.]
2.	MONITORING SITE LANE NUMBER (LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER LANE 2 IS NEXT TO LANE 1, ETC.)		[1.]
	SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
* 3.	SHOULDER SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 ______	[4.]	[4.]
* 4.	TOTAL SHOULDER WIDTH (Feet)	[_4.]	[10.]
* 5.	PAVED SHOULDER WIDTH (Feet)	[_4.]	[10.]
6.	SHOULDER BASE TYPE (CODES-TABLE A.6)	[31.]	[31.]
7.	SHOULDER SURFACE THICKNESS (Inches)	[11.0]	[11.0]
8.	SHOULDER BASE THICKNESS (Inches)	[_4.0]	[_4.0]
* 9.	SUBSURFACE DRAINAGE TYPE No Subsurface Drainage... 1 Longitudinal Drains... 2 Transverse Drains... 3 Drainage Blanket... 4 Well System... 5 Drainage Blanket with Longitudinal Drains... 6 Other (Specify)... 7 ______		[2.]
*10.	SUBSURFACE DRAINAGE LOCATION Continuous Along Test Section... 1 Intermittent... 2		[1.]
11.	DIAMETER OF LONGITUDINAL DRAINPIPES (Inches)		[_4.0]
12.	SPACING OF LATERALS (Feet)		[250.]

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SPS-2 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[60]				
2	[06]	[26]	[_ _4.0]	_ _ _._	_ _ _._	_ _ _._
3	[05]	[31]	[_ _4.0]	_ _ _._	_ _ _._	_ _ _._
4	[03]	[04]	[_11.0]	_ _ _._	_ _ _._	_ _ _._
5	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
6	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
7	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
8	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
9	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
10	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (Feet) [_N._]
(Rock, Stone, Dense Shale)

NOTES:

1. Layer 1 is the subgrade soil, the highest numbered layer is the pavement surface.

2. Layer description codes:
   Overlay.................01 Base Layer........05 Porous Friction Course..09
   Seal/Tack Coat..........02 Subbase Layer.....06 Surface Treatment.......10
   Original Surface........03 Subgrade..........07 Embankment (Fill).......11
   HMAC Layer (Subsurface).04 Interlayer........08

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990 (Appendix B of SPS-2 Data Collection Guide).

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

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SPS-2 CONSTRUCTION DATA
SHEET 5
LAYER THICKNESS MEASUREMENTS

* STATE CODE [0 8]
* SPS PROJECT CODE [0 2]
* TEST SECTION NO. [2 4]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET ___ OF ___

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS (INCHES): DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	LEAN CONCRETE BASE	PCC SURFACE
0+00	0	5.1	4.2	.	11.7
	60	3.9	4.7	.	11.3
169+90	96	3.5	4.7	.	11.2
	132	2.7	4.9	.	10.8
	168	2.6	5.1	.	10.7
0+50	0	4.8	4.4	.	11.7
	60	3.1	4.6	.	11.4
170+40	96	2.5	4.6	.	11.3
	132	2.1	4.6	.	11.1
	168	1.4	4.8	.	10.9
1+00	0	4.9	4.4	.	11.4
	60	3.6	4.9	.	11.2
170+90	96	2.1	5.2	.	11.2
	132	2.4	4.9	.	11.0
	168	2.4	5.3	.	10.8
1+50	0	4.1	4.5	.	11.9
	60	4.1	4.6	.	11.7
171+40	96	4.6	4.2	.	11.7
	132	4.4	4.5	.	11.5
	168	3.6	5.4	.	11.4
2+00	0	3.4	4.4	.	11.5
	60	3.2	4.6	.	11.3
171+90	96	3.5	4.8	.	11.4
	132	4.3	4.6	.	11.2
	168	4.1	5.2	.	11.0
2+50	0	4.2	4.1	.	11.3
	60	3.7	4.9	.	10.8
172+40	96	3.7	4.8	.	10.9
	132	3.7	4.7	.	10.7
	168	3.4	5.2	.	10.4
3+00	0	3.3	4.4	.	11.0
	60	3.2	4.6	.	10.3
172+90	96	3.0	4.7	.	10.2
	132	3.8	4.8	.	10.2
	168	3.3	5.3	.	9.8
LAYER NUMBER[1]		2	3		4

[1] from Construction Data Sheet 4

PREPARER N. Henderson EMPLOYER NCE DATE 07/11/94

SPS-2 CONSTRUCTION DATA SHEET 5 LAYER THICKNESS MEASUREMENTS	* STATE CODE [03] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET ____ OF ____

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS (INCHES)			
		DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	LEAN CONCRETE BASE	PCC SURFACE
3+50	0	2.1	4.4		10.9
173+40	60	2.6	4.5		10.5
	96	2.4	4.6		10.6
	132	3.6	4.7		10.3
	168	3.4	5.1		9.8
4+00	0	1.3	4.6		11.5
173+90	60	1.9	4.6		10.7
	96	2.0	4.7		10.8
	132	4.1	4.8		10.7
	168	2.4	5.3		10.1
4+50	0	1.1	3.8		12.9
174+40	60	3.0	3.7		13.1
	96	2.4	3.9		13.0
	132	3.0	4.1		12.5
	165	3.3	4.5		11.7
5+00	0	1.3	4.9		12.9
174+90	60	2.1	4.2		13.1
	96	2.2	4.2		13.1
	132	2.4	4.3		12.5
	168	2.2	4.5		12.0
+					
+					
+					
LAYER NUMBER[1]		2	3		4

[1] from Construction Data Sheet 4

PREPARER N. Henderson EMPLOYER NCE DATE 07/11/94

SPS-2 CONSTRUCTION DATA SHEET 6 SUBGRADE PREPARATION	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [07-26-93]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [08-04-93]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [3]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 ______

*4. GROSS WEIGHT (Tons) [_ 5.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[_]	[_N._]
*6. STABILIZING AGENT 2	[_]	[_ _._]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 ______

*7. TYPICAL LIFT THICKNESS (Inches) [_N._]
(For Fill Sections Only)

NOTE: Density Data is recorded on Sampling Data Sheet 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) ______

PREPARER N. Henderson EMPLOYER NCE DATE 9-8-93

SPS-2 CONSTRUCTION DATA SHEET 7 CUT-FILL SECTION LOCATIONS	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

ORDER	*1 CUT-FILL[1]	REFERENCE PROJECT STATION NUMBER *2 START	REFERENCE PROJECT STATION NUMBER *3 END	*4 TEST SECTION NUMBER [2]
1	1	0 + 00	5 + 00	080216
2	1	68 + 00	73 + 00	080224
3		+	+	
4		+	+	
5		+	+	
6		+	+	
7		+	+	
8		+	+	
9		+	+	
10		+	+	
11		+	+	
12		+	+	
13		+	+	
14		+	+	
15		+	+	
16		+	+	
17		+	+	
18		+	+	
19		+	+	
20		+	+	
21		+	+	
22		+	+	
23		+	+	
24		+	+	
25		+	+	

NOTES:

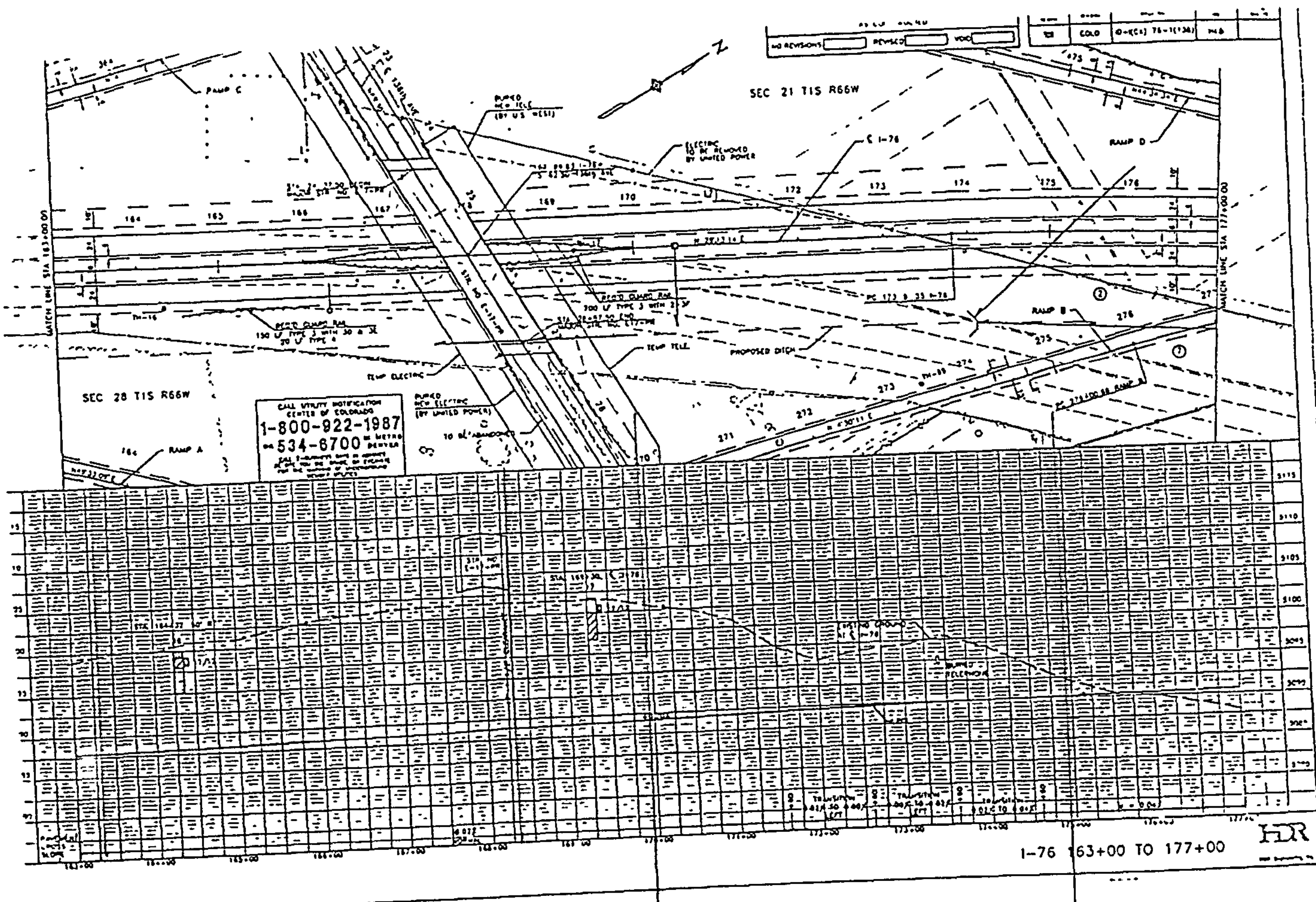
1. Indicate the type of subgrade section with one of the following:

   Cut... 1 Fill... 2

2. A given Test Section No. will be repeated if both cut and fill sections exist within the test section.

PREPARER N. Henderson EMPLOYER NCE DATE 10-14-94

SPS-2 CONSTRUCTION DATA SHEET 8 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]



169+90

174+90

PREPARER N. Henderson EMPLOYER NCE DATE 10-14-94

SPS-2 CONSTRUCTION DATA SHEET 9 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [08-05-93]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [08-05-93]

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [3]

COMPACTION TYPE CODES
Pneumatic - Tired... 1   Steel Wheel Tandem... 2   Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 ____________________

*5. GROSS WEIGHT (Tons) [_ 4.0]

*6. LIFT THICKNESSES

Nominal First Lift Placement Thickness (Inches) [_ 4.0]

Nominal Second Lift Placement Thickness (Inches) [_ _._]

Nominal Third Lift Placement Thickness (Inches) [_ _._]

Nominal Fourth Lift Placement Thickness (Inches) [_ _._]

NOTE: Density Data is recorded on Sampling Data Sheet 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) ____________________

PREPARER N. Henderson EMPLOYER NCE DATE 8-8-93

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SPS-2 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

COMPOSITION OF COARSE AGGREGATE — TYPE — PERCENT

* 2. [1] [__ __ __.]

* 3. [_] [__ __ __.]

* 4. [_] [__ __ __.]

Crushed Stone... 1 Manufactured gravel... 2 Crushed Gravel... 3
Crushed Slag..... 4 Manufactured Lightweight....... 5
Other (Specify)________________ 6

COMPOSITION OF FINE AGGREGATE — TYPE — PERCENT

* 5. [1] [__ __ __.]

* 6. [_] [__ __ __.]

* 7. [_] [__ __ __.]

Natural Sand... 1
Crushed or Manufactured Sand (From Crushed Gravel or Stone)...2
Recycled Concrete... 3 Other (Specify)________________ 4

* 8. TYPE OF MINERAL FILLER [_]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4 Other (Specify)... 5 ________________

BULK SPECIFIC GRAVITIES:

* 9. COARSE AGGREGATE (AASHTO T85 or ASTM C127) [_.__ __ __]

*10. FINE AGGREGATE (AASHTO T84 or ASTM C128) [_.__ __ __]

*11. MINERAL FILLER (AASHTO T100 or ASTM D854) [_.__ __ __]

*12. AGGREGATE COMBINATION (CALCULATED) [_.__ __ __]

13. EFFECTIVE SPECIFIC GRAVITY OF AGGREGATE COMBINATION (CALCULATED) [_.__ __ __]

AGGREGATE DURABILITY TEST RESULTS (CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[__ __]	[__ __ __.__]
15.	Coarse	[__ __]	[__ __ __.__]
16.	Coarse	[__ __]	[__ __ __.__]
17.	Coarse and Fine - Combined	[__ __]	[__ __ __.__]

18. POLISH VALUE OF COARSE AGGREGATES SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) [__ __]

PREPARER N. Henderson EMPLOYER NCE DATE ________

SPS-2 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

*1. LAYER NUMBER (FROM CONSTRUCTION SHEET 4) [3]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [03]
(IF OTHER, SPECIFY) ______

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [76]
(IF OTHER, SPECIFY) ______

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [_.___]
(AASHTO T228)

ORIGINAL ASPHALT CEMENT PROPERTIES **(If available from supplier)**

5. VISCOSITY OF ASPHALT AT 140°F (Poises)
(AASHTO T202) [______.]

6. VISCOSITY OF ASPHALT AT 275°F (Centistokes)
(AASHTO T202) [____.__]

7. PENETRATION AT 77°F (AASHTO T49) (Tenths of a mm)
(100 g., 5 sec.) [____.]

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

	TYPE	QUANTITY (%)
8. MODIFIER #1	[__]	[__.]
9. MODIFIER #2 (IF OTHER, SPECIFY) ______	[__]	[__.]

10. DUCTILITY AT 77°F (cm) [___.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (cm) [___.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT [___.]
AT 39.2°f (cm/Min)

13. PENETRATION AT 39.2°F (AASHTO T49) (Tenths of a mm) [___.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [___.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER N. Henderson EMPLOYER NCE DATE ______

February 1992

SPS-2 CONSTRUCTION DATA SHEET 12 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

*1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

*2. TYPE OF SAMPLES [1]
COMPACTED IN LABORATORY... 1 TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [_._ _ _]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [_._ _ _] NUMBER OF TESTS [_ _.]
5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]
6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX - AASHTO T164 OR ASTM D2172)

*7. MEAN [3.330] NUMBER OF SAMPLES [_ 3.]
8. MINIMUM [3.010] MAXIMUM [3.800]
9. STD. DEV. [_._ _ _]

PERCENT AIR VOIDS

*10. MEAN [_._ _ _] NUMBER OF SAMPLES [_ _.]
11. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]
12. STD. DEV. [_._ _ _]

*13. VOIDS IN MINERAL AGGREGATE (Percent) [_ _._]

*14. EFFECTIVE ASPHALT CONTENT (Percent) [_ _._]

*15. MARSHALL STABILITY (lbs) (AASHTO T245 OR ASTM D1559) [_ _ _._]

*16. NUMBER OF BLOWS [_ _]

*17. MARSHALL FLOW (Hundredths of an Inch) [_ _ _ _.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ _.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25mm of Width) [_ _ _ _.]
(AASHTO T246 OR ASTM 1561)

*20. TYPE OF ANTISTRIPPING AGENT USED [_ _]
(SEE TYPE CODES, TABLE A.21) OTHER (SPECIFY) ________

*21. ANTISTRIPPING AGENT USED: LIQUID... 1 SOLID... 2 [_]

*22. AMOUNT OF ANTISTRIPPING AGENT USED (Percent) [_ _._]

(LIQUID: enter percent of asphalt cement weight SOLID: enter percent of aggregate weight.)

PREPARER N. Henderson EMPLOYER NCE DATE ________

SPS-2 CONSTRUCTION DATA SHEET 13 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [08-24-93]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [08-24-93]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Number
Plant 1	[2]	Dahlia Plant	[_ _ 8]	[10]	[_ 3]
Plant 2	[_]	______	[_ _ _]	[_ _]	[_ _]

Plant Type: Batch..... 1 Drum Mix.... 2 Other...3 Specify______

4. MANUFACTURER OF ASPHALT CONCRETE PAVER Blaw-Knox 657

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER PF 5000

6. SINGLE PASS LAYDOWN WIDTH (Feet) [13.5]

7. PATB PLACEMENT LIFTS: Layer Number [_ 3]

Nominal First Lift Placement Thickness (Inches) [5.0]

Nominal Second Lift Placement Thickness (Inches) [_._]

Nominal Third Lift Placement Thickness (Inches) [_._]

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (disruptions, rain, equip. problems, etc.)______

PREPARER N. Henderson EMPLOYER NCE DATE 8-24-93

SPS-2 CONSTRUCTION DATA SHEET 14 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO [24]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [03-24-93]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [03-24-93]
*3. LAYER NUMBER [3]

*4. MIXING TEMPERATURE (°F) [225]

5. LAYDOWN TEMPERATURES (°F)
Mean.................. [179] Number of Tests .... [32.]
Minimum.............. [160] Maximum .. [208.]
Standard Deviation... [__ __ __]

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	5.0				
7	B	Steel-Whl Tandem	__.__				
8	C	Steel-Whl Tandem	__.__				
9	D	Steel-Whl Tandem	__.__				
10	E	Pneumatic-Tired	__.__	____.			
11	F	Pneumatic-Tired	__.__	____.			
12	G	Pneumatic-Tired	__.__	____.			
13	H	Pneumatic-Tired	__.__	____.			
14	I	Single-Drum Vibr.	__.__		____.	.___	__._
15	J	Single-Drum Vibr.	__.__		____.	.___	__._
16	K	Single-Drum Vibr.	__.__		____.	.___	__._
17	L	Single-Drum Vibr.	__.__		____.	.___	__._
18	M	Double-Drum Vibr.	__.__		____.	.___	__._
19	N	Double-Drum Vibr.	__.__		____.	.___	__._
20	O	Double-Drum Vibr.	__.__		____.	.___	__._
21	P	Double-Drum Vibr.	__.__		____.	.___	__._
22	Q	Other					

	COMPACTION DATA	First Lift	Second Lift	Third Lift	Fourth Lift
	BREAKDOWN				
23	Roller Code (A-Q)	A	_	_	_
24	Coverages	02	__.	__.	__.
	INTERMEDIATE				
25	Roller Code (A-Q)	_	_	_	_
26	Coverages	__	__.	__.	__.
	FINAL				
27	Roller Code (A-Q)	_	_	_	_
28	Coverages	__	__.	__.	__.
29	Air Temperature (°F)	98	___	___	___.
30	Compacted Thickness (In)	04	__	__	_._
31	Curing Period (Days)	13	___	___	__._

PREPARER N Henderson EMPLOYER NCE DATE 3-24-93

SPS-2 CONSTRUCTION DATA SHEET 15 PORTLAND CEMENT CONCRETE LAYERS-JOINT DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [4]

* 2. AVERAGE CONTRACTION JOINT SPACING (Feet) [_ 15.0]

3. (RANDOM JOINT SPACING, IF ANY: ______)

* 4. SKEWNESS OF JOINTS (ft/lane) [_.0]

* 5. TRANSVERSE CONTRACTION JOINT LOAD TRANSFER SYSTEM [1]
    Round Dowels.......................... 1
    Aggregate Interlock.................... 2
    Other (Specify) ______ 3

* 6. ROUND DOWEL DIAMETER (Inches) [1.50]

* 7. DOWEL SPACING (Inches) [12.]

8. DISTANCE OF NEAREST DOWEL FROM OUTSIDE LANE-SHOULDER EDGE (Inches) [11.0]

9. DOWEL LENGTH (Inches) [18.]

10. DOWEL COATING [1]
    Paint and/or Grease.................... 1
    Plastic................................ 2
    Monel.................................. 3
    Stainless Steel........................ 4
    Epoxy.................................. 5
    Other (Specify) ______ 6

11. METHOD USED TO INSTALL MECHANICAL LOAD TRANSFER DEVICES [1]
    Preplaced on Baskets................... 1
    Mechanically Installed................. 2
    Other (Specify) ______ 3

12. DOWEL ALIGNMENT CHECKED BEFORE PLACEMENT (Y/N) [Y]

13. DOWEL ALIGNMENT CHECKED AFTER PLACEMENT (Y/N) [N]

If Yes, describe method used ______
(e.g. Pachometer, Ground Penetrating Radar)

PREPARER N Henderson EMPLOYER NCE DATE 9-7-93

SPS-2 CONSTRUCTION DATA SHEET 16 PORTLAND CEMENT CONCRETE LAYERS-JOINT DATA CONT'D	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [4]

* 2. METHOD USED TO FORM TRANSVERSE JOINTS [1]
Sawed.................... 1 Metal Insert.........3
Plastic Insert............ 2
Other (Specify) ______________________ 4

* 3. TYPE OF LONGITUDINAL JOINT (BETWEEN LANES) [2]
Butt..................... 1 Insert Weakened Plane..... 3
Sawed Weakened Plane...... 2
Other (Specify) ______________________ 4

* 4. TYPE OF SHOULDER-TRAFFIC LANE JOINT [2]
Butt..................... 1 Insert Weakened Plane..... 3
Sawed Weakened Plane...... 2
Other (Specify) ______________________ 4

*5. AVERAGE DEPTH OF SAWCUT, FROM MEASUREMENTS (Inches)............... [2.75]

*6. TIME INTERVAL BETWEEN CONCRETE PLACEMENT AND SAWCUT (HOURS)....... [_ _ 6.]

7. TRANSVERSE JOINT SEALANT TYPE (AS BUILT) [5]
Preformed (Open Web)...... 1 Rubberized Asphalt........ 3
Asphalt.................. 2 Low-Modulus Silicone...... 4
Other (Specify) ______________________ 5

TRANSVERSE JOINT SEALANT RESERVOIR (AS BUILT)

8. WIDTH, (Inches).. [_.38]

9. DEPTH, (Inches).. [_.25]

LONGITUDINAL JOINT SEALANT RESERVOIR (AS BUILT)

10. WIDTH, (Inches).. [_.38]

11. DEPTH, (Inches).. [_.25]

12. BETWEEN LANE TIE BAR DIAMETER (Inches) [_.625]

13. BETWEEN LANE TIE BAR LENGTH (Inches) [30.]

14. BETWEEN LANE TIE BAR SPACING (Inches) [30.0]

SHOULDER-TRAFFIC LANE JOINT SEALANT RESERVOIR (AS BUILT)

15. WIDTH, (Inches).. [_.38]

16. DEPTH, (Inches).. [_.25]

PREPARER N. Henderson EMPLOYER NCE DATE 9-10-93

SPS-2 CONSTRUCTION DATA SHEET 18 PORTLAND CEMENT CONCRETE LAYERS - MIXTURE DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

*1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [4]

MIX DESIGN (OVEN DRIED WEIGHT - PER CUBIC YARD)

*2. Coarse Aggregate (Pounds) .... [1865.]

*3. Fine Aggregate (Pounds) .... [_935.]

*4. Cement (Pounds) .... [_749.]

*5. Water (Pounds) .... [_257.]

*6. TYPE CEMENT USED (See Cement Type Codes, Table A.11) [55]
(If Other, Specify Southwestern Type I/II Low Alkali)

*7. ALKALI CONTENT OF CEMENT, (PERCENT BY WEIGHT OF CEMENT) [_ _.59]

ADMIXTURES (PERCENT BY WEIGHT OF CEMENT)

		TYPE CODE	AMOUNT
*8.	ADMIXTURE #1	[10.0]	[_ 20.0]
*9.	ADMIXTURE #2	[8.0]	[_ _ _.025]
*10.	ADMIXTURE #3	[_._] ?WRA	[_ _ 0.3]

(See Cement Admixture Codes, Table A.12)
(If Other, Specify) ______________________)

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
11.	Coarse	[01]	[_32.0]
12.	Coarse	[_ _]	[_ _ _._]
13.	Coarse	[_ _]	[_ _ _._]
14.	Coarse and Fine	[_ _]	[_ _ _._]

PREPARER N. Henderson EMPLOYER NCE DATE 9-10-93

SPS-2 CONSTRUCTION DATA SHEET 19 PORTLAND CEMENT CONCRETE LAYERS MIXTURE DATA (CONTINUED)	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [4]

COMPOSITION OF COARSE AGGREGATE

	TYPE	PERCENT
* 2.	[1]	[1 0 0.]
* 3.	[_]	[_ _ _.]
* 4.	[_]	[_ _ _.]

Crushed Stone.... 1 Manufactured gravel...... 2 Crushed Gravel...... 3
Crushed Slag..... 4 Lightweight............. 5 Recycled Concrete... 6
Other (Specify)________________________ 7

* 5. GEOLOGIC CLASSIFICATION OF COARSE AGGREGATE (SEE GEOLOGIC CLASSIFICATION CODES, TABLE A.9) [_ N.]

COMPOSITION OF FINE AGGREGATE

	TYPE	PERCENT
* 6.	[1]	[1 0 0.]
* 7.	[_]	[_ _ _.]
* 8.	[_]	[_ _ _.]

Natural Sand... 1
Crushed, Manufactured Sand (From Crushed Gravel or Stone)...2
Recycled Concrete... 3 Other (Specify)________________________ 4

9. INSOLUBLE RESIDUE, PERCENT (ASTM D3042) [_ N _.]

10. GRADATION OF COARSE AGGREGATE

Sieve Size	% Passing
2"........	_ _ _
1 1/2"....	1 0 0
1"........	_ 9 9
7/8"......	_ _ _
3/4"......	_ 8 7
5/8"......	_ _ _
1/2"......	_ 5 5
3/8"......	_ 3 9
No. 4.....	_ _ 8

11. GRADATION OF FINE AGGREGATE

Sieve Size	% Passing
No. 8.....	_ 9 7
No. 10....	_ 7 8
No. 16....	_ _ _
No. 30....	_ 4 4
No. 40....	_ _ _
No. 50....	_ 1 7
No. 80....	_ _ _
No. 100...	_ _ 3
No. 200...	_ _ 0.6

BULK SPECIFIC GRAVITIES:

12. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.7 3 0]

13. Fine Aggregate (AASHTO T84 or ASTM C128) [2.6 0 0]

PREPARER N. Henderson EMPLOYER NCE DATE 9-8-93

SPS-2 CONSTRUCTION DATA SHEET 20 PORTLAND CEMENT CONCRETE LAYERS PLACEMENT DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [09-07-93]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [09-08-93]

*3. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [4]

*4. CONCRETE MIX PLANT AND HAUL

	Name	Haul Distance (Mi)	Time (Min)
Plant 1	CastleRock	[_ _ 1]	[_ _ 5]
Plant 2		[_ _ _]	[_ _ _]
Plant 3		[_ _ _]	[_ _ _]

*5. PAVER TYPE [1]
Slip Form Paver.... 1 Side Form... 2
Other (Specify) ____________ 3

6. PAVER MANUFACTURER AND MODEL NUMBER Gomaco PS60

7. SPREADER TYPE (if applicable) ____________

8. SPREADER MANUFACTURER AND MODEL NUMBER Caterpillar SF-550

9. WIDTH PAVED IN ONE PASS (Feet) [38.0]

10. DOWEL PLACEMENT METHOD [2]
Dowel Bar Inserter (DBI)..... 1 Dowel Basket..... 2

11. NUMBER OF VIBRATORS [26]

12. VIBRATOR SPACING (Inches) [18]

13. DEPTH OF VIBRATORS BELOW SURFACE (Inches) [_6.0]

14. ADDITIONAL VIBRATION APPLIED none

PREPARER N Henderson EMPLOYER NCE DATE 9-8-93

SPS-2 CONSTRUCTION DATA SHEET 21 PORTLAND CEMENT CONCRETE LAYERS PLACEMENT DATA (CONTINUED)	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

1. CONSOLIDATION OF MATERIALS [1]
   Internal Vibrators... 1 Vibrating Screeds... 2 Troweling... 3
   Rolling... 4 Tamping... 5
   Other (Specify)... 6 ____

2. FINISHING [4]
   Screeding... 1 Hand-Troweling... 2 Machine-Troweling... 3
   Other (Specify)... 4 1,2,3

3. CURING [1]

Membrane Curing Compound......	1	Burlap-Polyethylene Blanket...	5
Burlap Curing Blankets........	2	Cotton Mat Curing.............	6
Waterproof Paper Blankets.....	3	Hay...........................	7
White Polyethylene Sheeting...	4		
Other (Specify) Wax Base Emulsion			8

4. TEXTURING [7]

Tine..........................	1	Grooved Float.................	4
Broom.........................	2	Astro Turf....................	5
Burlap Drag...................	3	None..........................	6
Other (Specify) 1,3,5			7

PREPARER N. Henderson EMPLOYER NCE DATE 9-8-93

SPS-2 CONSTRUCTION DATA SHEET 22 PORTLAND CEMENT CONCRETE SURFACE LAYER PROFILE DATA	* STATE CODE [0 8] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [2 4]

1. DATE PROFILE MEASURED (Month-Day-Year) [09-15-93]
2. PROFILOGRAPH TYPE California... 1 Rainhart... 2 [1]
3. PROFILE INDEX (Inches/Mile). [12.7]
4. INTERPRETATION METHOD Manual.. 1 Mechanical.. 2 Computer.. 3 [1]
5. HEIGHT OF BLANKING BAND (Inches) [0.20]
6. CUTOFF HEIGHT (Inches) [_.__]
7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) [Y]
8. WAS SURFACE PROFILE CORRECTED BY DIAMOND GRINDING? (YES, NO) [N]

   IF YES COMPLETE THE FOLLOWING:

9. DATE DIAMOND GRINDING OPERATIONS BEGAN (Month-Day-Year) [__-__-__]
10. DATE DIAMOND GRINDING OPERATIONS COMPLETED (Month-Day-Year) [__-__-__]

*11. REASON FOR GRINDING [_]
Elimination of Faulting... 1 Elimination of Slab Warping... 2
Improve Skid Resistance... 3
Restoration of Transverse Drainage Slope... 4
Correction of Construction Deficiencies...5
Other (Specify)... 6 ______________________

12. AVERAGE DEPTH OF CUT (Inches) [_.__]
13. CUTTING HEAD WIDTH (Inches) [___.__]
14. AVERAGE GROOVE WIDTH (Inches) [_._]
15. AVERAGE SPACING BETWEEN BLADES (Inches) [_._]

PREPARER *Michael Baro* EMPLOYER CDOT DATE 5/24/94

SPS-2 CONSTRUCTION DATA SHEET 27 MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [24]

Provide any miscellaneous comments and notes concerning construction operations which may have an influence on the ultimate performance of the test sections or which may cause undesired performance differences to occur between test sections. Also include any quality control measurements or data for which space is not provided on other forms. Provide an indication of the basis for such measurements, such as an ASTM, AASHTO, or Agency standard test designation.

High winds began about 3:05 pm @ Stn 173+50 with lots of dust. Began raining heavily @ 3:10 pm - Stopped paving and put in a construction joint @ Stn. 173+40 - Section was covered with plastic sheeting as quickly as possible ≈ 30 minutes. Paving resumed next day from Stn. 173+40 to end of monitoring section 169+40.

PREPARER N. Henderson EMPLOYER NCE DATE 9-8-93

SPS-2 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [15]

* 1. LANE WIDTH (Feet) [1 2.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

	SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
* 3.	SHOULDER SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 ________	[4.]	[4.]
* 4.	TOTAL SHOULDER WIDTH (Feet)	[_ 4.]	[1 0.]
* 5.	PAVED SHOULDER WIDTH (Feet)	[_ 4.]	[1 0.]
6.	SHOULDER BASE TYPE (CODES-TABLE A.6)	[2 6.]	[2 6.]
7.	SHOULDER SURFACE THICKNESS (Inches)	[1 1. 0]	[1 1. 0]
8.	SHOULDER BASE THICKNESS (Inches)	[_ 6. 0]	[_ 6. 0]

* 9. SUBSURFACE DRAINAGE TYPE [1.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 ________

*10. SUBSURFACE DRAINAGE LOCATION [N.]
Continuous Along Test Section... 1 Intermittent... 2

11. DIAMETER OF LONGITUDINAL DRAINPIPES (Inches) [_ N._]

12. SPACING OF LATERALS (Feet) [_ N _.]

PREPARER N. Henderson EMPLOYER NCE DATE 10-12-93

February 1992

SPS-2 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [15]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[60]				
2	[05]	[26]	[_ _6.0]	_ _ _._	_ _ _._	_ _ _._
3	[03]	[04]	[_11.0]	_ _ _._	_ _ _._	_ _ _._
4	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
5	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
6	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
7	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
8	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
9	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
10	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (Feet) (Rock, Stone, Dense Shale) [_ N . _]

NOTES:

1. Layer 1 is the subgrade soil, the highest numbered layer is the pavement surface.

2. Layer description codes:

Overlay.................01	Base Layer........05	Porous Friction Course..09
Seal/Tack Coat..........02	Subbase Layer.....06	Surface Treatment.......10
Original Surface........03	Subgrade..........07	Embankment (Fill).......11
HMAC Layer (Subsurface).04	Interlayer........08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990 (Appendix B of SPS-2 Data Collection Guide).

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER N. Henderson EMPLOYER NCE DATE 10-12-93

SPS-2 CONSTRUCTION DATA SHEET 5 LAYER THICKNESS MEASUREMENTS	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [13]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET ___ OF ___

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS (INCHES)			
		DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	LEAN CONCRETE BASE	PCC SURFACE
0+00 122+65	0	7.2			11.5
	36	5.7			11.7
	72	5.7			11.6
	108	6.5			11.4
	144	6.6			11.2
0+50 123+15	0	6.1			11.6
	36	5.7			11.6
	72	5.8			11.5
	108	6.3			11.5
	144	6.0			11.5
1+00 123+65	0	6.0			11.4
	36	5.6			11.5
	72	5.7			11.6
	108	6.3			11.5
	144	6.2			11.4
1+50 124+15	0	6.0			11.2
	36	5.8			11.4
	72	5.7			11.3
	108	6.0			11.4
	144	5.7			11.4
2+00 124+65	0	6.1			11.3
	36	5.8			11.5
	72	5.6			11.5
	108	6.1			11.4
	144	5.9			11.2
2+50 125+15	0	6.1			11.5
	36	5.6			11.4
	72	5.7			11.4
	108	6.4			11.1
	144	6.1			11.3
3+00 125+65	0	5.9			11.3
	36	5.4			11.3
	72	5.7			11.4
	108	6.4			11.2
	144	6.3			11.1
LAYER NUMBER[1]		2			3

[1] from Construction Data Sheet 4

PREPARER N. Henderson EMPLOYER NCE DATE 06-30-94

SPS-2 CONSTRUCTION DATA SHEET 5 LAYER THICKNESS MEASUREMENTS	* STATE CODE [68] * SPS PROJECT CODE [02] * TEST SECTION NO. [15]

LAYER THICKNESS MEASUREMENTS (Inches) SHEET ___ OF ___

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS (INCHES)			
		DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	LEAN CONCRETE BASE	PCC SURFACE
3+50	0	5.8			11.1
126+15	36	6.2			11.1
	72	6.0			11.1
	108	6.3			11.0
	144	6.4			10.9
4+00	0	6.3			11.2
126+65	36	5.4			11.3
	72	5.9			11.3
	108	6.4			11.3
	144	6.3			11.3
4+50	0	6.0			11.7
127+15	36	5.9			11.6
	72	5.6			11.6
	108	6.2			11.5
	144	5.9			11.6
5+00	0	5.7			11.8
127+65	36	5.6			11.7
	72	5.5			11.9
	108	6.2			11.7
	144	6.1			11.6
__+__ __					
__+__ __					
__+__ __					
LAYER NUMBER[1]		2			3

[1] from Construction Data Sheet 4

PREPARER N. Henderson EMPLOYER NCE DATE 6-30-94

SPS-2 CONSTRUCTION DATA SHEET 6 SUBGRADE PREPARATION	* STATE CODE [08] * SPS PROJECT CODE [22] * TEST SECTION NO. [15]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [09-29-93]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [10-07-93]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [4]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 ______

*4. GROSS WEIGHT (Tons) [_4.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[_]	[_ N._]
*6. STABILIZING AGENT 2	[_]	[_ _._]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 ______

*7. TYPICAL LIFT THICKNESS (Inches) [78.0]
(For Fill Sections Only)

NOTE: Density Data is recorded on Sampling Data Sheet 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) ______

PREPARER N. Henderson EMPLOYER NCE DATE 10-12-93

SPS-2 CONSTRUCTION DATA SHEET 7 CUT-FILL SECTION LOCATIONS	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [15]

ORDER	*1 CUT-FILL[1]	REFERENCE PROJECT STATION NUMBER *2 START	REFERENCE PROJECT STATION NUMBER *3 END	*4 TEST SECTION NUMBER [2]
1	1	0 + 00	5 + 00	080216
2	2	20 + 70	25 + 70	080215
3		+	+	
4		+	+	
5		+	+	
6		+	+	
7		+	+	
8		+	+	
9		+	+	
10		+	+	
11		+	+	
12		+	+	
13		+	+	
14		+	+	
15		+	+	
16		+	+	
17		+	+	
18		+	+	
19		+	+	
20		+	+	
21		+	+	
22		+	+	
23		+	+	
24		+	+	
25		+	+	

NOTES:

1. Indicate the type of subgrade section with one of the following:

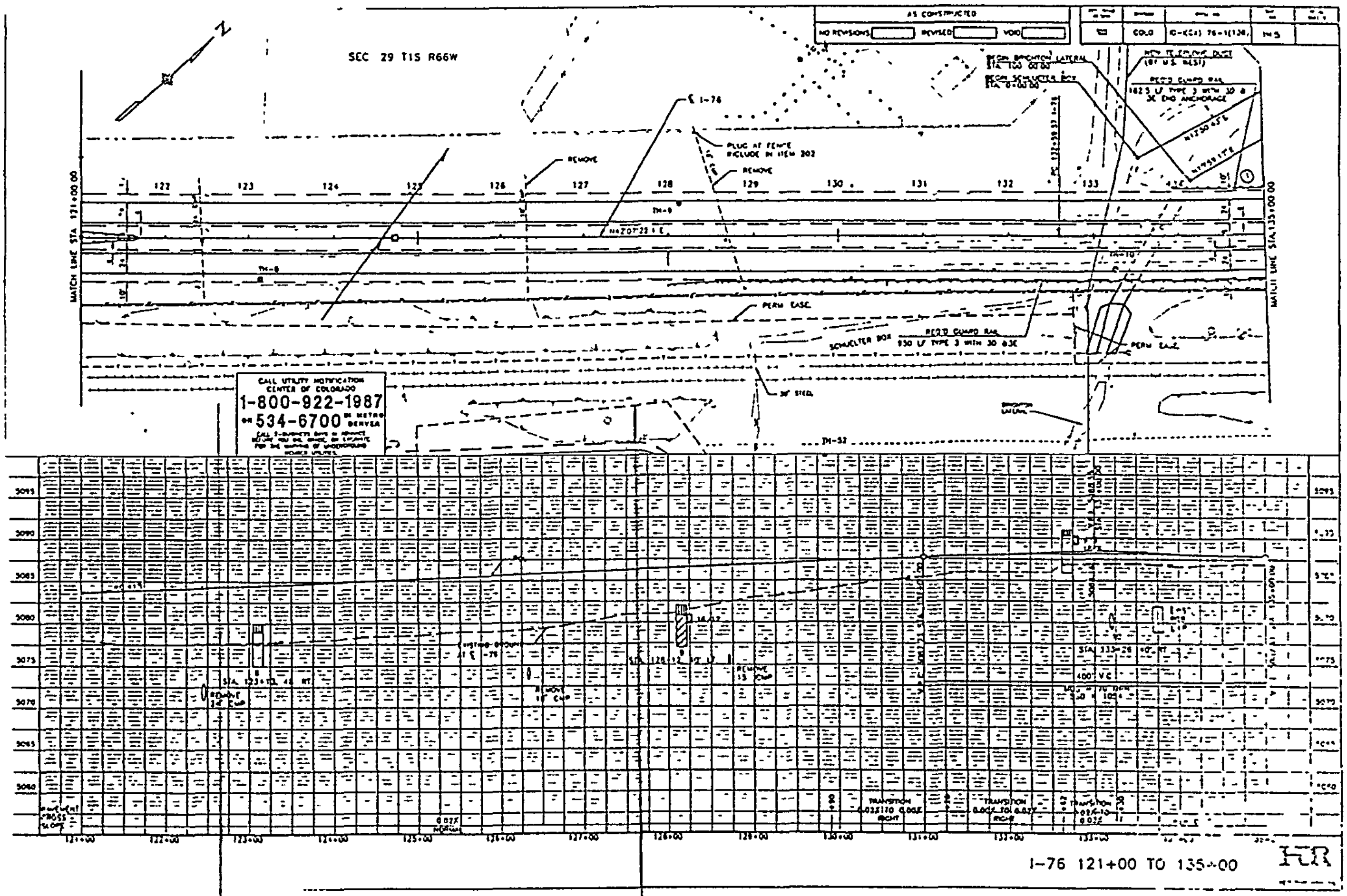
   Cut... 1 Fill... 2

2. A given Test Section No. will be repeated if both cut and fill sections exist within the test section.

PREPARER N. Henderson EMPLOYER NCE DATE 10-17-94

February 1992

SPS-2 CONSTRUCTION DATA SHEET 8 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [15]



122+65

127+65

PREPARER N. Henderson EMPLOYER NCE DATE ______________

SPS-2 CONSTRUCTION DATA SHEET 9 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [15]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [10-08-93]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [10-08-93]

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [3]

COMPACTION TYPE CODES
Pneumatic - Tired... 1 Steel Wheel Tandem... 2 Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 ____________________

*5. GROSS WEIGHT (Tons) [_ 4.0]

*6. LIFT THICKNESSES

Nominal First Lift Placement Thickness (Inches) [_ 6.0]

Nominal Second Lift Placement Thickness (Inches) [_ _._]

Nominal Third Lift Placement Thickness (Inches) [_ _._]

Nominal Fourth Lift Placement Thickness (Inches) [_ _._]

NOTE: Density Data is recorded on Sampling Data Sheet 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) ____________________

PREPARER N. Henderson EMPLOYER NCE DATE 10-12-93

SPS-2 CONSTRUCTION DATA SHEET 15 PORTLAND CEMENT CONCRETE LAYERS-JOINT DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [15]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

* 2. AVERAGE CONTRACTION JOINT SPACING (Feet) [_ 15.0]

3. (RANDOM JOINT SPACING, IF ANY: ______________________________)

* 4. SKEWNESS OF JOINTS (ft/lane) [0.0]

* 5. TRANSVERSE CONTRACTION JOINT LOAD TRANSFER SYSTEM [1]
   - Round Dowels.......................... 1
   - Aggregate Interlock.................... 2
   - Other (Specify) ______________ 3

* 6. ROUND DOWEL DIAMETER (Inches) [1.50]

* 7. DOWEL SPACING (Inches) [12.]

8. DISTANCE OF NEAREST DOWEL FROM OUTSIDE LANE-SHOULDER EDGE (Inches) [_ 6.0]

9. DOWEL LENGTH (Inches) [18.]

10. DOWEL COATING [1]
   - Paint and/or Grease.................... 1
   - Plastic................................ 2
   - Monel.................................. 3
   - Stainless Steel........................ 4
   - Epoxy.................................. 5
   - Other (Specify) ______________ 6

11. METHOD USED TO INSTALL MECHANICAL LOAD TRANSFER DEVICES [1]
   - Preplaced on Baskets................... 1
   - Mechanically Installed................. 2
   - Other (Specify) ______________ 3

12. DOWEL ALIGNMENT CHECKED BEFORE PLACEMENT (Y/N) [Y]

13. DOWEL ALIGNMENT CHECKED AFTER PLACEMENT (Y/N) [N]

If Yes, describe method used ______________________________
(e.g. Pachometer, Ground Penetrating Radar)

PREPARER N. Henderson EMPLOYER NCE DATE 10-12-93

SPS-2 CONSTRUCTION DATA SHEET 16 PORTLAND CEMENT CONCRETE LAYERS-JOINT DATA CONT'D	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [15]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

* 2. METHOD USED TO FORM TRANSVERSE JOINTS [1]
Sawed.................... 1 Metal Insert.........3
Plastic Insert............ 2
Other (Specify) ______________________ 4

* 3. TYPE OF LONGITUDINAL JOINT (BETWEEN LANES). [2]
Butt..................... 1 Insert Weakened Plane..... 3
Sawed Weakened Plane...... 2
Other (Specify) ______________________ 4

* 4. TYPE OF SHOULDER-TRAFFIC LANE JOINT [2]
Butt..................... 1 Insert Weakened Plane..... 3
Sawed Weakened Plane...... 2
Other (Specify) ______________________ 4

*5. AVERAGE DEPTH OF SAWCUT, FROM MEASUREMENTS (Inches)............... [2.75]

*6. TIME INTERVAL BETWEEN CONCRETE PLACEMENT AND SAWCUT (HOURS)....... [_ _ 6.]

7. TRANSVERSE JOINT SEALANT TYPE (AS BUILT) [5]
Preformed (Open Web)...... 1 Rubberized Asphalt........ 3
Asphalt.................. 2 Low-Modulus Silicone...... 4
Other (Specify) Dow Corning 888 5

TRANSVERSE JOINT SEALANT RESERVOIR (AS BUILT)

8. WIDTH, (Inches).. [0.38]

9. DEPTH, (Inches).. [2.75]

LONGITUDINAL JOINT SEALANT RESERVOIR (AS BUILT)

10. WIDTH, (Inches).. [_.38]

11. DEPTH, (Inches).. [2.75]

12. BETWEEN LANE TIE BAR DIAMETER (Inches) [1.50]

13. BETWEEN LANE TIE BAR LENGTH (Inches) [30.]

14. BETWEEN LANE TIE BAR SPACING (Inches) [30.0]

SHOULDER-TRAFFIC LANE JOINT SEALANT RESERVOIR (AS BUILT)

15. WIDTH, (Inches).. [_.38]

16. DEPTH, (Inches).. [2.76]

PREPARER N. Henderson EMPLOYER NCE DATE 10-12-94

SPS-2 CONSTRUCTION DATA SHEET 18 PORTLAND CEMENT CONCRETE LAYERS - MIXTURE DATA	* STATE CODE [0 8] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [1 5]

*1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

MIX DESIGN (OVEN DRIED WEIGHT - PER CUBIC YARD)

*2. Coarse Aggregate (Pounds).. [1 7 2 0.]

*3. Fine Aggregate (Pounds).. [1 4 3 0.]

*4. Cement (Pounds).. [_ 3 9 9.]

*5. Water (Pounds).. [_ 2 3 6.]

*6. TYPE CEMENT USED (See Cement Type Codes, Table A.11) [5 5]
(If Other, Specify Southwestern Type I/II Low Alkali)

*7. ALKALI CONTENT OF CEMENT, (PERCENT BY WEIGHT OF CEMENT) [_ _.59]

ADMIXTURES (PERCENT BY WEIGHT OF CEMENT)

	TYPE CODE	AMOUNT
*8. ADMIXTURE #1	[10.0]	[_ 25.0]
*9. ADMIXTURE #2	[0.8]	[_ _ _.099]
*10. ADMIXTURE #3	[_._]	[_ _ _._]

(See Cement Admixture Codes, Table A.12)
(If Other, Specify) ______________________)

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
11.	Coarse	[0 1]	[_ 3 2.0]
12.	Coarse	[_ _]	[_ _ _._]
13.	Coarse	[_ _]	[_ _ _._]
14.	Coarse and Fine	[_ _]	[_ _ _._]

PREPARER N. Henderson EMPLOYER NCE DATE 10-12-93

SPS-2 CONSTRUCTION DATA SHEET 19 PORTLAND CEMENT CONCRETE LAYERS MIXTURE DATA (CONTINUED)	* STATE CODE [0 8] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [1 5]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [__]

COMPOSITION OF COARSE AGGREGATE	TYPE	PERCENT
* 2.	[1]	[1 0 0.]
* 3.	[__]	[__ __ __.]
* 4.	[__]	[__ __ __.]

Crushed Stone.... 1 Manufactured gravel...... 2 Crushed Gravel...... 3
Crushed Slag..... 4 Lightweight............. 5 Recycled Concrete... 6
Other (Specify)__________________ 7

* 5. GEOLOGIC CLASSIFICATION OF COARSE AGGREGATE [__ N.]
(SEE GEOLOGIC CLASSIFICATION CODES, TABLE A.9)

COMPOSITION OF FINE AGGREGATE	TYPE	PERCENT
* 6.	[1]	[1 0 0.]
* 7.	[__]	[__ __ __.]
* 8.	[__]	[__ __ __.]

Natural Sand... 1
Crushed, Manufactured Sand (From Crushed Gravel or Stone)...2
Recycled Concrete... 3 Other (Specify)__________________ 4

9. INSOLUBLE RESIDUE, PERCENT (ASTM D3042) [__ N.]

10. GRADATION OF COARSE AGGREGATE

Sieve Size	% Passing
2"........	
1 1/2"....	100
1"........	99
7/8"......	
3/4"......	87
5/8"......	
1/2"......	55
3/8"......	39
No. 4.....	8

11. GRADATION OF FINE AGGREGATE

Sieve Size	% Passing
No. 8.....	97
No. 10....	
No. 16....	78
No. 30....	44
No. 40....	
No. 50....	17
No. 80....	
No. 100...	3
No. 200...	0.6

BULK SPECIFIC GRAVITIES:

12. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.730]

13. Fine Aggregate (AASHTO T84 or ASTM C128) [2.600]

PREPARER N. Henderson EMPLOYER NCE DATE 10-17-94

SPS-2 CONSTRUCTION DATA SHEET 20 PORTLAND CEMENT CONCRETE LAYERS PLACEMENT DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [15]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [10-12-93]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [10-12-93]

*3. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

*4. CONCRETE MIX PLANT AND HAUL

	Name	Haul Distance (Mi)	Time (Min)
Plant 1	Castle Rock	[_ _ 9]	[_ 20]
Plant 2		[_ _ _]	[_ _ _]
Plant 3		[_ _ _]	[_ _ _]

*5. PAVER TYPE [1]
Slip Form Paver.... 1 Side Form... 2
Other (Specify) ____________ 3

6. PAVER MANUFACTURER AND MODEL NUMBER CAT SF-550

7. SPREADER TYPE (if applicable) ____________

8. SPREADER MANUFACTURER AND MODEL NUMBER GOMACO PS-60

9. WIDTH PAVED IN ONE PASS (Feet) [38.0]

10. DOWEL PLACEMENT METHOD [2]
Dowel Bar Inserter (DBI)..... 1 Dowel Basket..... 2

11. NUMBER OF VIBRATORS [28]

12. VIBRATOR SPACING (Inches) [18]

13. DEPTH OF VIBRATORS BELOW SURFACE (Inches) [_ 6.0]

14. ADDITIONAL VIBRATION APPLIED ____________

PREPARER N. Henderson EMPLOYER NCE DATE 10-12-93

SPS-2 CONSTRUCTION DATA SHEET 21 PORTLAND CEMENT CONCRETE LAYERS PLACEMENT DATA (CONTINUED)	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [15]

1. CONSOLIDATION OF MATERIALS [1]
   Internal Vibrators... 1 Vibrating Screeds... 2 Troweling... 3
   Rolling... 4 Tamping... 5
   Other (Specify)... 6 ______

2. FINISHING [4]
   Screeding... 1 Hand-Troweling... 2 Machine-Troweling... 3
   Other (Specify)... 4 1,2,3

3. CURING [1]
   Membrane Curing Compound...... 1 Burlap-Polyethylene Blanket... 5
   Burlap Curing Blankets........ 2 Cotton Mat Curing............ 6
   Waterproof Paper Blankets..... 3 Hay.......................... 7
   White Polyethylene Sheeting... 4
   Other (Specify) ______ 8

4. TEXTURING [7]
   Tine.......................... 1 Grooved Float................ 4
   Broom......................... 2 Astro Turf................... 5
   Burlap Drag................... 3 None......................... 6
   Other (Specify) 1,3,5 7

PREPARER N. Henderson EMPLOYER NCE DATE 10-12-93

SPS-2 CONSTRUCTION DATA SHEET 22 PORTLAND CEMENT CONCRETE SURFACE LAYER PROFILE DATA	* STATE CODE [0 8] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [1 5]

1. DATE PROFILE MEASURED (Month-Day-Year) [1 0 - 1 4 - 9 3]

2. PROFILOGRAPH TYPE California... 1 Rainhart... 2 [1]

3. PROFILE INDEX (Inches/Mile). [2.6]

4. INTERPRETATION METHOD Manual.. 1 Mechanical.. 2 Computer.. 3 [1]

5. HEIGHT OF BLANKING BAND (Inches) [0.2 0]

6. CUTOFF HEIGHT (Inches) [__.__ __]

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) [Y]

8. WAS SURFACE PROFILE CORRECTED BY DIAMOND GRINDING? (YES, NO) [N]

IF YES COMPLETE THE FOLLOWING:

9. DATE DIAMOND GRINDING OPERATIONS BEGAN (Month-Day-Year) [__ __-__ __-__ __]

10. DATE DIAMOND GRINDING OPERATIONS COMPLETED (Month-Day-Year) [__ __-__ __-__ __]

*11. REASON FOR GRINDING [__]
Elimination of Faulting... 1 Elimination of Slab Warping... 2
Improve Skid Resistance... 3
Restoration of Transverse Drainage Slope... 4
Correction of Construction Deficiencies...5
Other (Specify)... 6 ________________

12. AVERAGE DEPTH OF CUT (Inches) [__ .__ __]

13. CUTTING HEAD WIDTH (Inches) [__ __ __ .__ __]

14. AVERAGE GROOVE WIDTH (Inches) [__ .__]

15. AVERAGE SPACING BETWEEN BLADES (Inches) [__.__]

PREPARER Mark Buss EMPLOYER CDOT DATE 5/24/94

SPS-2 CONSTRUCTION DATA SHEET 27 MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS	* STATE CODE [0 8] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [1 5]

Provide any miscellaneous comments and notes concerning construction operations which may have an influence on the ultimate performance of the test sections or which may cause undesired performance differences to occur between test sections. Also include any quality control measurements or data for which space is not provided on other forms. Provide an indication of the basis for such measurements, such as an ASTM, AASHTO, or Agency standard test designation.

PREPARER N Henderson EMPLOYER NCE DATE 10-12-93

SPS-2 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE * SPS PROJECT CODE * TEST SECTION NO.	[0 8] [0 2] [2 2]

		INSIDE SHOULDER	OUTSIDE SHOULDER
* 1.	LANE WIDTH (Feet)		[1 2.]
2.	MONITORING SITE LANE NUMBER (LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER LANE 2 IS NEXT TO LANE 1, ETC.)		[1.]
	SHOULDER DATA		
* 3.	SHOULDER SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 ______	[4.]	[4.]
* 4.	TOTAL SHOULDER WIDTH (Feet)	[_ 4.]	[1 0.]
* 5.	PAVED SHOULDER WIDTH (Feet)	[_ 4.]	[1 0.]
6.	SHOULDER BASE TYPE (CODES-TABLE A.6)	[3 1.]	[3 1.]
7.	SHOULDER SURFACE THICKNESS (Inches)	[_ 8. 0]	[_ 8. 0]
8.	SHOULDER BASE THICKNESS (Inches)	[_ 4. 0]	[_ 4. 0]
* 9.	SUBSURFACE DRAINAGE TYPE No Subsurface Drainage... 1 Longitudinal Drains... 2 Transverse Drains... 3 Drainage Blanket... 4 Well System... 5 Drainage Blanket with Longitudinal Drains... 6 Other (Specify)... 7 ______		[2.]
*10.	SUBSURFACE DRAINAGE LOCATION Continuous Along Test Section... 1 Intermittent... 2		[1.]
11.	DIAMETER OF LONGITUDINAL DRAINPIPES (Inches)		[_ 4. 0]
12.	SPACING OF LATERALS (Feet)		[2 5 0.]

PREPARER N. Henderson EMPLOYER NCE DATE 9-3-93

SPS-2 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [0 8] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [2 2]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[5 2]				
2	[0 6]	[2 6]	[_ _4.0]	_ _ _._	_ _ _._	_ _ _._
3	[0 5]	[3 1]	[_ _4.0]	_ _ _._	_ _ _._	_ _ _._
4	[0 3]	[0 4]	[_ _8.0]	_ _ _._	_ _ _._	_ _ _._
5	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
6	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
7	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
8	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
9	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
10	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (Feet) (Rock, Stone, Dense Shale) [_ N. _]

NOTES:

1. Layer 1 is the subgrade soil, the highest numbered layer is the pavement surface.

2. Layer description codes:

Overlay.................01	Base Layer........05	Porous Friction Course..09
Seal/Tack Coat..........02	Subbase Layer.....06	Surface Treatment.......10
Original Surface........03	Subgrade..........07	Embankment (Fill).......11
HMAC Layer (Subsurface).04	Interlayer........08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990 (Appendix B of SPS-2 Data Collection Guide).

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER N. Henderson EMPLOYER NCE DATE 9-3-93

SPS-2 CONSTRUCTION DATA SHEET 5 LAYER THICKNESS MEASUREMENTS	* STATE CODE [0 3] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [2 2]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET ___ OF ___

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS (INCHES): DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	LEAN CONCRETE BASE	PCC SURFACE
0+00	0	4.5	4.3	.	8.6
192+85	36	3.6	4.7	.	8.2
	72	4.2	4.6	.	8.2
	108	4.6	4.5	.	8.3
	144	4.4	5.0	.	8.3
0+50	0	4.6	4.1	.	8.8
193+35	36	4.4	4.5	.	8.5
	72	4.6	4.4	.	8.6
	108	4.3	4.3	.	8.6
	144	4.4	4.2	.	8.5
1+00	0	4.2	4.3	.	8.6
193+85	36	4.0	4.3	.	8.5
	72	4.3	4.1	.	8.5
	108	4.4	4.2	.	8.5
	144	4.1	4.4	.	8.5
1+50	0	7.0	4.3	.	8.3
194+35	36	5.7	4.5	.	8.3
	72	5.8	4.3	.	8.4
	108	5.5	4.3	.	8.5
	144	5.2	4.2	.	8.5
2+00	0	5.0	[illegible]	.	8.3
194+85	36	4.6	4.7	.	8.4
	72	4.0	4.3	.	8.7
	108	4.0	4.2	.	8.9
	144	5.7	4.1	.	8.8
2+50	0	2.8	5.0	.	8.5
195+35	36	2.4	4.9	.	8.5
	72	3.2	4.3	.	8.8
	108	3.4	4.5	.	8.8
	144	4.2	3.9	.	8.7
3+00	0	2.9	4.9	.	8.6
195+85	36	2.8	4.8	.	8.3
	72	3.5	4.6	.	8.5
	108	3.7	4.6	.	8.7
	144	3.7	4.5	.	8.5
LAYER NUMBER[1]		2	3		4

[1] from Construction Data Sheet 4

PREPARER N. Henderson EMPLOYER NCE DATE 06-30-94

SPS-2 CONSTRUCTION DATA SHEET 5 LAYER THICKNESS MEASUREMENTS	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [22]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET ___ OF ___

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS (INCHES)			
		DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	LEAN CONCRETE BASE	PCC SURFACE
3+50 196+35	0	3.9	4.6	.	8.5
	36	3.5	4.9	.	8.3
	72	3.4	4.6	.	8.5
	108	3.2	4.5	.	8.6
	144	3.7	4.2	.	8.5
4+00 196+85	0	3.1	4.5	.	8.4
	36	2.5	4.7	.	8.5
	72	3.1	4.6	.	8.6
	108	3.2	4.5	.	8.8
	144	3.5	4.5	.	8.7
4+50 197+35	0	4.2	4.6	.	8.5
	36	3.9	4.7	.	8.6
	72	3.1	4.6	.	8.8
	108	3.9	4.3	.	8.9
	144	4.3	4.3	.	8.6
5+00 197+85	0	3.6	4.5	.	8.5
	36	3.7	4.5	.	8.6
	72	3.4	4.6	.	8.7
	108	3.3	4.4	.	8.7
	144	3.5	4.3	.	8.6
__+__ __		.	.	.	.
__+__ __		.	.	.	.
__+__ __		.	.	.	.
LAYER NUMBER[1]		2	3		4

[1] from Construction Data Sheet 4

PREPARER N. Henderson EMPLOYER NCE DATE 06-30-94

SPS-2 CONSTRUCTION DATA SHEET 6 SUBGRADE PREPARATION	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [22]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [07-15-93]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [08-03-93]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [3]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 ______

*4. GROSS WEIGHT (Tons) [_5.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[_]	[_N._]
*6. STABILIZING AGENT 2	[_]	[_ _._]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 ______

*7. TYPICAL LIFT THICKNESS (Inches) [_90.0]
(For Fill Sections Only)

NOTE: Density Data is recorded on Sampling Data Sheet 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) ______

PREPARER N. Henderson EMPLOYER NCE DATE 9-3-93

SPS-2 CONSTRUCTION DATA SHEET 7 CUT-FILL SECTION LOCATIONS	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [22]

ORDER	*1 CUT-FILL[1]	REFERENCE PROJECT STATION NUMBER *2 START	REFERENCE PROJECT STATION NUMBER *3 END	*4 TEST SECTION NUMBER [2]
1	1	0 + 00	5 + 00	080216
2	2	90 + 95	95 + 95	080222
3		+	+	
4		+	+	
5		+	+	
6		+	+	
7		+	+	
8		+	+	
9		+	+	
10		+	+	
11		+	+	
12		+	+	
13		+	+	
14		+	+	
15		+	+	
16		+	+	
17		+	+	
18		+	+	
19		+	+	
20		+	+	
21		+	+	
22		+	+	
23		+	+	
24		+	+	
25		+	+	

NOTES:

1. Indicate the type of subgrade section with one of the following:

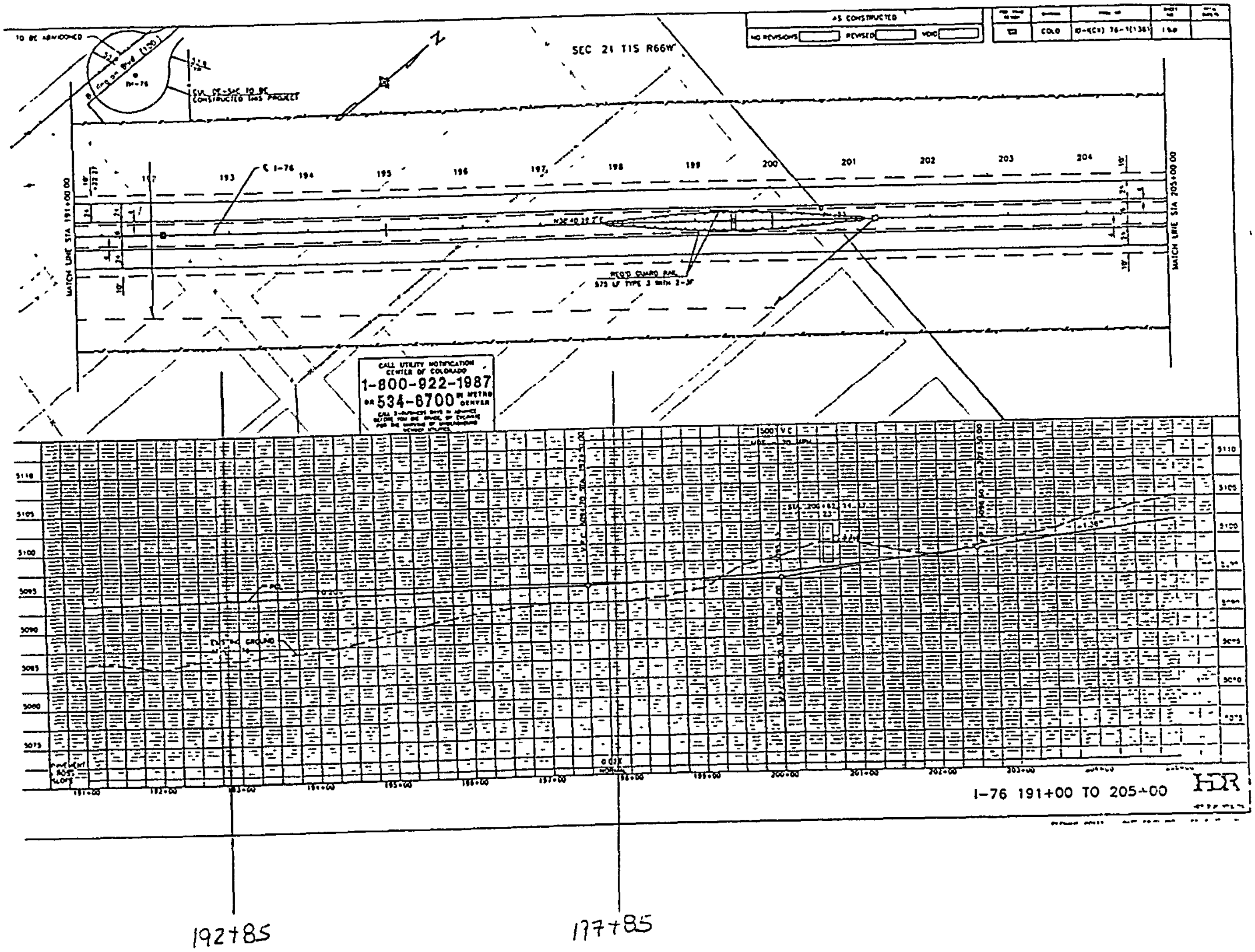
   Cut... 1 Fill... 2

2. A given Test Section No. will be repeated if both cut and fill sections exist within the test section.

PREPARER N. Henderson EMPLOYER NCE DATE 10-17-94

February 1992

SPS-2 CONSTRUCTION DATA SHEET 8 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [22]



PREPARER N. Henderson EMPLOYER NCE DATE ________

SPS-2 CONSTRUCTION DATA SHEET 9 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [22]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [08-04-93]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [08-04-93]

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [2]

COMPACTION TYPE CODES
Pneumatic - Tired... 1 Steel Wheel Tandem... 2 Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 ______

*5. GROSS WEIGHT (Tons) [_ 5.0]

*6. LIFT THICKNESSES

Nominal First Lift Placement Thickness (Inches) [_ 5.0]

Nominal Second Lift Placement Thickness (Inches) [_ _._]

Nominal Third Lift Placement Thickness (Inches) [_ _._]

Nominal Fourth Lift Placement Thickness (Inches) [_ _._]

NOTE: Density Data is recorded on Sampling Data Sheet 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) ______

PREPARER N. Henderson EMPLOYER NCE DATE 8-5-93

February 1992

SPS-2 CONSTRUCTION DATA SHEET 10 PLANT-MIXED ASPHALT BOUND LAYERS AGGREGATE PROPERTIES	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [22]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

COMPOSITION OF COARSE AGGREGATE — TYPE — PERCENT

* 2. [_] [_ _ _.]

* 3. [_] [_ _ _.]

* 4. [_] [_ _ _.]

Crushed Stone... 1 Manufactured gravel... 2 Crushed Gravel... 3
Crushed Slag..... 4 Manufactured Lightweight....... 5
Other (Specify)__________ 6

COMPOSITION OF FINE AGGREGATE — TYPE — PERCENT

* 5. [_] [_ _ _.]

* 6. [_] [_ _ _.]

* 7. [_] [_ _ _.]

Natural Sand... 1
Crushed or Manufactured Sand (From Crushed Gravel or Stone)...2
Recycled Concrete... 3 Other (Specify)__________ 4

* 8. TYPE OF MINERAL FILLER [_]
Stone Dust... 1 Hydrated Lime... 2 Portland Cement... 3
Fly Ash... 4 Other (Specify)... 5 __________

BULK SPECIFIC GRAVITIES:

* 9. COARSE AGGREGATE (AASHTO T85 or ASTM C127) [_._ _ _]

*10. FINE AGGREGATE (AASHTO T84 or ASTM C128) [_._ _ _]

*11. MINERAL FILLER (AASHTO T100 or ASTM D854) [_._ _ _]

*12. AGGREGATE COMBINATION (CALCULATED) [_._ _ _]

13. EFFECTIVE SPECIFIC GRAVITY OF AGGREGATE COMBINATION (CALCULATED) [_._ _ _]

AGGREGATE DURABILITY TEST RESULTS (CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
14.	Coarse	[_ _]	[_ _ _._]
15.	Coarse	[_ _]	[_ _ _._]
16.	Coarse	[_ _]	[_ _ _._]
17.	Coarse and Fine - Combined	[_ _]	[_ _ _._]

18. POLISH VALUE OF COARSE AGGREGATES SURFACE LAYER ONLY (AASHTO T279, ASTM D3319) [_ _]

PREPARER N Henderson EMPLOYER NCE DATE 8-20-93

SPS-2 CONSTRUCTION DATA SHEET 11 PLANT-MIXED ASPHALT BOUND LAYERS ASPHALT CEMENT PROPERTIES	* STATE CODE [0 8] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [2 2]

*1. LAYER NUMBER (FROM CONSTRUCTION SHEET 4) [3]

*2. ASPHALT GRADE (SEE ASPHALT CODE SHEET, TABLE A.16) [03]
(IF OTHER, SPECIFY) ____________________

*3. SOURCE (SEE SUPPLY CODE SHEET, TABLE A.14) [76]
(IF OTHER, SPECIFY) ____________________

4. SPECIFIC GRAVITY OF ASPHALT CEMENT [_._ _ _]
(AASHTO T228)

ORIGINAL ASPHALT CEMENT PROPERTIES **(If available from supplier)**

5. VISCOSITY OF ASPHALT AT 140°F (Poises) [_ _ _ _ _ _.]
(AASHTO T202)

6. VISCOSITY OF ASPHALT AT 275°F (Centistokes) [_ _ _ _._ _]
(AASHTO T202)

7. PENETRATION AT 77°F (AASHTO T49) (Tenths of a mm) [_ _ _ _.]
(100 g., 5 sec.)

ASPHALT MODIFIERS (SEE TYPE CODE, A.15)

	TYPE	QUANTITY (%)
8. MODIFIER #1	[_ _]	[_ _.]
9. MODIFIER #2	[_ _]	[_ _.]

(IF OTHER, SPECIFY) ____________________

10. DUCTILITY AT 77°F (cm) [_ _ _.]
(AASHTO T51)

11. DUCTILITY AT 39.2°F (cm) [_ _ _.]
(AASHTO T51)

12. TEST RATE FOR DUCTILITY MEASUREMENT [_ _ _.]
AT 39.2°f (cm/Min)

13. PENETRATION AT 39.2°F (AASHTO T49) (Tenths of a mm) [_ _ _.]
(200 g., 60 sec.)

14. RING AND BALL SOFTENING POINT (AASHTO T53) (°F) [_ _ _.]

NOTE: If emulsified or cutback asphalt was used, enter "N" in the spaces for "Original Asphalt Cement Properties".

PREPARER N. Henderson EMPLOYER NCE DATE 8-20-93

SPS-2 CONSTRUCTION DATA SHEET 12 PLANT-MIXED ASPHALT BOUND LAYERS MIXTURE PROPERTIES	* STATE CODE [0 8] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [2 2]

*1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

*2. TYPE OF SAMPLES [1]
COMPACTED IN LABORATORY... 1 TAKEN FROM TEST SECTION... 2

*3. MAXIMUM SPECIFIC GRAVITY (NO AIR VOIDS) [_._ _ _]
(AASHTO T209 OR ASTM D2041)

BULK SPECIFIC GRAVITY (ASTM D1188)

*4. MEAN [_._ _ _] NUMBER OF TESTS [_ _.]
5. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]
6. STD. DEV. [_._ _ _]

ASPHALT CONTENT (PERCENT WEIGHT OF TOTAL MIX - AASHTO T164 OR ASTM D2172)

*7. MEAN [_._ _ _] NUMBER OF SAMPLES [_ _.]
8. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]
9. STD. DEV. [_._ _ _]

PERCENT AIR VOIDS

*10. MEAN [_._ _ _] NUMBER OF SAMPLES [_ _.]
11. MINIMUM [_._ _ _] MAXIMUM [_._ _ _]
12. STD. DEV. [_._ _ _]

*13. VOIDS IN MINERAL AGGREGATE (Percent) [_ _._]

*14. EFFECTIVE ASPHALT CONTENT (Percent) [_ _._]

*15. MARSHALL STABILITY (lbs) (AASHTO T245 OR ASTM D1559) [_ _ _._]

*16. NUMBER OF BLOWS [_ _]

*17. MARSHALL FLOW (Hundredths of an Inch) [_ _ _ _.]
(AASHTO T245 OR ASTM D1559)

*18. HVEEM STABILITY (AASHTO T246 OR ASTM D1561) [_ _ _.]

*19. HVEEM COHESIOMETER VALUE (GRAMS/25mm of Width) [_ _ _ _.]
(AASHTO T246 OR ASTM 1561)

*20. TYPE OF ANTISTRIPPING AGENT USED [_ _]
(SEE TYPE CODES, TABLE A.21) OTHER (SPECIFY) ____________

*21. ANTISTRIPPING AGENT USED: LIQUID... 1 SOLID... 2 [_]

*22. AMOUNT OF ANTISTRIPPING AGENT USED (Percent) [_ _._]

(LIQUID: enter percent of asphalt cement weight SOLID: enter percent of aggregate weight.)

PREPARER N Henderson EMPLOYER NCE DATE 8-20-93

SPS-2 CONSTRUCTION DATA SHEET 13 PLANT-MIXED ASPHALT BOUND LAYERS PLACEMENT DATA	* STATE CODE [0 8] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [2 2]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [08-23-93]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [08-23-93]

*3 ASPHALT CONCRETE PLANT AND HAUL

	Type	Name	Haul Distance (Mi)	Time (Min)	Layer Number
Plant 1	[2]	Dahlia Plant	[_ _ 8]	[1.0]	[_ 3]
Plant 2	[_]	________	[_ _ _]	[_ _]	[_ _]

Plant Type: Batch..... 1 Drum Mix.... 2 Other...3 Specify________

4. MANUFACTURER OF ASPHALT CONCRETE PAVER Blaw-Knox 657

5. MODEL DESIGNATION OF ASPHALT CONCRETE PAVER ________

6. SINGLE PASS LAYDOWN WIDTH (Feet) [135]

7. PATB PLACEMENT LIFTS: Layer Number [_ 3]

Nominal First Lift Placement Thickness (Inches) [_._]

Nominal Second Lift Placement Thickness (Inches) [_._]

Nominal Third Lift Placement Thickness (Inches) [_._]

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (disruptions, rain, equip. problems, etc.)________

PREPARER N. Henderson EMPLOYER NCE DATE 8-23-93

SPS-2 CONSTRUCTION DATA SHEET 14 PLANT-MIXED ASPHALT BOUND LAYERS COMPACTION DATA	* STATE CODE [05] * SPS PROJECT CODE [02] * TEST SECTION NO [22]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [02-_3-92]
*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [02-23-92]
*3. LAYER NUMBER [3]

*4. MIXING TEMPERATURE (°F) [225.]

5. LAYDOWN TEMPERATURES (°F)
Mean................. [189.] Number of Tests .... [31.]
Minimum.............. [168.] Maximum...... ... . [208.]
Standard Deviation... [__ __.__]

ROLLER DATA

	Roller Code #	Roller Description	Gross Wt (Tons)	Tire Press. (psi)	Frequency (Vibr./Min)	Amplitude (Inches)	Speed (mph)
6	A	Steel-Whl Tandem	5.0				
7	B	Steel-Whl Tandem	__ __.__				
8	C	Steel-Whl Tandem	__ __.__				
9	D	Steel-Whl Tandem	__ __.__				
10	E	Pneumatic-Tired	__ __.__	__ __ __ __.			
11	F	Pneumatic-Tired	__ __.__	__ __ __ __.			
12	G	Pneumatic-Tired	__ __.__	__ __ __ __.			
13	H	Pneumatic-Tired	__ __.__	__ __ __ __.			
14	I	Single-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
15	J	Single-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
16	K	Single-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
17	L	Single-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
18	M	Double-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
19	N	Double-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
20	O	Double-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
21	P	Double-Drum Vibr.	__ __.__		__ __ __ __.	.__ __ __	__ __.__
22	Q	Other					

	COMPACTION DATA	First Lift	Second Lift	Third Lift	Fourth Lift
	BREAKDOWN				
23	Roller Code (A-Q)	A	__	__	__
24	Coverages	2.	__ __.	__ __.	__ __.
	INTERMEDIATE				
25	Roller Code (A-Q)	__	__	__	__
26	Coverages	__ __.	__ __.	__ __.	__ __.
	FINAL				
27	Roller Code (A-Q)	__	__	__	__
28	Coverages	__ __.	__ __.	__ __.	__ __.
29	Air Temperature (°F)	95.	__ __ __.	__ __ __.	__ __ __.
30	Compacted Thickness (In)	4.0	__ __.__	__ __.__	__ __.__
31	Curing Period (Days)	10.0	__ __ __.__	__ __ __.__	__ __ __.__

PREPARER N. Henderson EMPLOYER NCE DATE 03-22-92

SPS-2 CONSTRUCTION DATA SHEET 15 PORTLAND CEMENT CONCRETE LAYERS-JOINT DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [22]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [4]

* 2. AVERAGE CONTRACTION JOINT SPACING (Feet) [_ 15.0]

3. (RANDOM JOINT SPACING, IF ANY: ______________________________)

* 4. SKEWNESS OF JOINTS (ft/lane) [0.0]

* 5. TRANSVERSE CONTRACTION JOINT LOAD TRANSFER SYSTEM [1]
   - Round Dowels.......................... 1
   - Aggregate Interlock.................... 2
   - Other (Specify) ____________________ 3

* 6. ROUND DOWEL DIAMETER (Inches) [1.25]

* 7. DOWEL SPACING (Inches) [12.]

8. DISTANCE OF NEAREST DOWEL FROM OUTSIDE LANE-SHOULDER EDGE (Inches) [_ 6.0]

9. DOWEL LENGTH (Inches) [18.]

10. DOWEL COATING [1]
    - Paint and/or Grease.................... 1
    - Plastic................................ 2
    - Monel.................................. 3
    - Stainless Steel........................ 4
    - Epoxy.................................. 5
    - Other (Specify) ____________________ 6

11. METHOD USED TO INSTALL MECHANICAL LOAD TRANSFER DEVICES [1]
    - Preplaced on Baskets................... 1
    - Mechanically Installed................. 2
    - Other (Specify) ____________________ 3

12. DOWEL ALIGNMENT CHECKED BEFORE PLACEMENT (Y/N) [Y]

13. DOWEL ALIGNMENT CHECKED AFTER PLACEMENT (Y/N) [N]

    If Yes, describe method used ______________________________
    (e.g. Pachometer, Ground Penetrating Radar)

PREPARER N. Henderson EMPLOYER NCE DATE 9-3-93

February 1992

SPS-2 CONSTRUCTION DATA SHEET 16 PORTLAND CEMENT CONCRETE LAYERS-JOINT DATA CONT'D	* STATE CODE [0 8] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [2 2]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [4]

* 2. METHOD USED TO FORM TRANSVERSE JOINTS [1]
Sawed.................... 1 Metal Insert.........3
Plastic Insert............ 2
Other (Specify) ______________________ 4

* 3. TYPE OF LONGITUDINAL JOINT (BETWEEN LANES) [2]
Butt...................... 1 Insert Weakened Plane..... 3
Sawed Weakened Plane...... 2
Other (Specify) ______________________ 4

* 4. TYPE OF SHOULDER-TRAFFIC LANE JOINT [2]
Butt...................... 1 Insert Weakened Plane..... 3
Sawed Weakened Plane...... 2
Other (Specify) ______________________ 4

*5. AVERAGE DEPTH OF SAWCUT, FROM MEASUREMENTS (Inches).............. [3.70]

*6. TIME INTERVAL BETWEEN CONCRETE PLACEMENT AND SAWCUT (HOURS)....... [_ _ 6.]

7. TRANSVERSE JOINT SEALANT TYPE (AS BUILT) [5]
Preformed (Open Web)...... 1 Rubberized Asphalt........ 3
Asphalt................... 2 Low-Modulus Silicone...... 4
Other (Specify) ______________________ 5

TRANSVERSE JOINT SEALANT RESERVOIR (AS BUILT)

8. WIDTH, (Inches).. [_.38]

9. DEPTH, (Inches).. [2.75]

LONGITUDINAL JOINT SEALANT RESERVOIR (AS BUILT)

10. WIDTH, (Inches)... [_.39]

11. DEPTH, (Inches)... [2.75]

12. BETWEEN LANE TIE BAR DIAMETER (Inches) [_.625]

13. BETWEEN LANE TIE BAR LENGTH (Inches) [30.]

14. BETWEEN LANE TIE BAR SPACING (Inches) [30.0]

SHOULDER-TRAFFIC LANE JOINT SEALANT RESERVOIR (AS BUILT)

15. WIDTH, (Inches)... [_.39]

16. DEPTH, (Inches)... [2.75]

PREPARER N. Henderson EMPLOYER NCE DATE 9-4-93

SPS-2 CONSTRUCTION DATA SHEET 18 PORTLAND CEMENT CONCRETE LAYERS - MIXTURE DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [22]

*1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [4]

MIX DESIGN (OVEN DRIED WEIGHT - PER CUBIC YARD)

*2. Coarse Aggregate (Pounds).................................... [1865.]

*3. Fine Aggregate (Pounds).................................... [935.]

*4. Cement (Pounds).................................... [749.]

*5. Water (Pounds).................................... [257.]

*6. TYPE CEMENT USED (See Cement Type Codes, Table A.11) [55]
(If Other, Specify Southwestern Type I/II Low Alkali)

*7. ALKALI CONTENT OF CEMENT, (PERCENT BY WEIGHT OF CEMENT) [__ .59]

ADMIXTURES (PERCENT BY WEIGHT OF CEMENT)

		TYPE CODE	AMOUNT
*8.	ADMIXTURE #1	[10.0]	[20.0]
*9.	ADMIXTURE #2	[8.0]	[.025]
*10.	ADMIXTURE #3	[_._] ?WRA	[0.3]

(See Cement Admixture Codes, Table A.12)
(If Other, Specify) ____________________)

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
11.	Coarse	[01]	[32.0]
12.	Coarse	[__]	[___.__]
13.	Coarse	[__]	[___.__]
14.	Coarse and Fine	[__]	[___.__]

PREPARER N Henderson EMPLOYER NCE DATE 9-3-93

February 1992

SPS-2 CONSTRUCTION DATA SHEET 19 PORTLAND CEMENT CONCRETE LAYERS MIXTURE DATA (CONTINUED)	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [22]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [__]

COMPOSITION OF COARSE AGGREGATE

	TYPE	PERCENT
* 2.	[1]	[100.]
* 3.	[__]	[__ __ __.]
* 4.	[__]	[__ __ __.]

Crushed Stone.... 1 Manufactured gravel...... 2 Crushed Gravel...... 3
Crushed Slag..... 4 Lightweight.............. 5 Recycled Concrete... 6
Other (Specify)________________ 7

* 5. GEOLOGIC CLASSIFICATION OF COARSE AGGREGATE (SEE GEOLOGIC CLASSIFICATION CODES, TABLE A.9) [_N.]

COMPOSITION OF FINE AGGREGATE

	TYPE	PERCENT
* 6.	[1]	[100.]
* 7.	[__]	[__ __ __.]
* 8.	[__]	[__ __ __.]

Natural Sand... 1
Crushed, Manufactured Sand (From Crushed Gravel or Stone)...2
Recycled Concrete... 3 Other (Specify)________________ 4

9. INSOLUBLE RESIDUE, PERCENT (ASTM D3042) [_ N_.]

10. GRADATION OF COARSE AGGREGATE

Sieve Size	% Passing
2"........	
1 1/2"....	100
1"........	99
7/8"......	
3/4"......	87
5/8"......	
1/2"......	55
3/8"......	39
No. 4.....	8

11. GRADATION OF FINE AGGREGATE

Sieve Size	% Passing
No. 8.....	97
No. 10....	
No. 16....	78
No. 30....	44
No. 40....	
No. 50....	17
No. 80....	
No. 100...	3
No. 200...	0.6

BULK SPECIFIC GRAVITIES:

12. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.730]

13. Fine Aggregate (AASHTO T84 or ASTM C128) [2.600]

PREPARER N. Henderson EMPLOYER NCE DATE 9-4-93

SPS-2 CONSTRUCTION DATA SHEET 20 PORTLAND CEMENT CONCRETE LAYERS PLACEMENT DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [22]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [09-03-93]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [09-03-93]

*3. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [4]

*4. CONCRETE MIX PLANT AND HAUL

	Name	Haul Distance (Mi)	Time (Min)
Plant 1	CastleRock	[_ _ 1]	[_ 1 0]
Plant 2	________	[_ _ _]	[_ _ _]
Plant 3	________	[_ _ _]	[_ _ _]

*5. PAVER TYPE [1]
Slip Form Paver.... 1 Side Form... 2
Other (Specify) ____________________ 3

6. PAVER MANUFACTURER AND MODEL NUMBER Gomoco PS-60

7. SPREADER TYPE (if applicable) ____________________

8. SPREADER MANUFACTURER AND MODEL NUMBER Caterpillar SF-550

9. WIDTH PAVED IN ONE PASS (Feet) [38.0]

10. DOWEL PLACEMENT METHOD [2]
Dowel Bar Inserter (DBI)..... 1 Dowel Basket..... 2

11. NUMBER OF VIBRATORS [26]

12. VIBRATOR SPACING (Inches) [18]

13. DEPTH OF VIBRATORS BELOW SURFACE (Inches) [_ 6.0]

14. ADDITIONAL VIBRATION APPLIED ____________________

PREPARER N. Henderson EMPLOYER NCE DATE 9-3-93

SPS-2 CONSTRUCTION DATA SHEET 21 PORTLAND CEMENT CONCRETE LAYERS PLACEMENT DATA (CONTINUED)	* STATE CODE [0 8] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [2 2]

1. CONSOLIDATION OF MATERIALS [1]
   Internal Vibrators... 1 Vibrating Screeds... 2 Troweling... 3
   Rolling... 4 Tamping... 5
   Other (Specify)... 6 ____

2. FINISHING [4]
   Screeding... 1 Hand-Troweling... 2 Machine-Troweling... 3
   Other (Specify)... 4 1,2,3

3. CURING [1]
   Membrane Curing Compound...... 1
   Burlap Curing Blankets........ 2
   Waterproof Paper Blankets..... 3
   White Polyethylene Sheeting... 4
   Burlap-Polyethylene Blanket... 5
   Cotton Mat Curing............. 6
   Hay........................... 7
   Other (Specify) ____ 8

4. TEXTURING [7]
   Tine.......................... 1
   Broom......................... 2
   Burlap Drag................... 3
   Grooved Float................. 4
   Astro Turf.................... 5
   None.......................... 6
   Other (Specify) 1,3,5 ____ 7

PREPARER N. Henderson EMPLOYER NCE DATE 9-3-93

SPS-2 CONSTRUCTION DATA SHEET 22 PORTLAND CEMENT CONCRETE SURFACE LAYER PROFILE DATA	* STATE CODE [0 8] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [2 2]

1. DATE PROFILE MEASURED (Month-Day-Year) [09 - 08 - 93]

2. PROFILOGRAPH TYPE California... 1 Rainhart... 2 [1]

3. PROFILE INDEX (Inches/Mile). [1.1]

4. INTERPRETATION METHOD Manual.. 1 Mechanical.. 2 Computer.. 3 [1]

5. HEIGHT OF BLANKING BAND (Inches) [0.2 0]

6. CUTOFF HEIGHT (Inches) [__.__ __]

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) [Y]

8. WAS SURFACE PROFILE CORRECTED BY DIAMOND GRINDING? (YES, NO) [N]

IF YES COMPLETE THE FOLLOWING:

9. DATE DIAMOND GRINDING OPERATIONS BEGAN (Month-Day-Year) [__ __-__ __-__ __]

10. DATE DIAMOND GRINDING OPERATIONS COMPLETED (Month-Day-Year) [__ __-__ __-__ __]

*11. REASON FOR GRINDING [__]
Elimination of Faulting... 1 Elimination of Slab Warping... 2
Improve Skid Resistance... 3
Restoration of Transverse Drainage Slope... 4
Correction of Construction Deficiencies...5
Other (Specify)... 6 ______________________

12. AVERAGE DEPTH OF CUT (Inches) [__ .__ __]

13. CUTTING HEAD WIDTH (Inches) [__ __ __ .__ __]

14. AVERAGE GROOVE WIDTH (Inches) [__ .__]

15. AVERAGE SPACING BETWEEN BLADES (Inches) [__.__]

PREPARER *Michael Bass* EMPLOYER CDOT DATE 5/24/94

SPS-2 CONSTRUCTION DATA SHEET 27 MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS	* STATE CODE [0 8] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [2 2]

Provide any miscellaneous comments and notes concerning construction operations which may have an influence on the ultimate performance of the test sections or which may cause undesired performance differences to occur between test sections. Also include any quality control measurements or data for which space is not provided on other forms. Provide an indication of the basis for such measurements, such as an ASTM, AASHTO, or Agency standard test designation.

PREPARER N. Henderson EMPLOYER NCE DATE 9-3-93

SPS-2 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [59]

		INSIDE SHOULDER	OUTSIDE SHOULDER
* 1.	LANE WIDTH (Feet)		[12.]
2.	MONITORING SITE LANE NUMBER (LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER LANE 2 IS NEXT TO LANE 1, ETC.)		[1.]
	SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
* 3.	SHOULDER SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 ________	[4.]	[4.]
* 4.	TOTAL SHOULDER WIDTH (Feet)	[_4.]	[10.]
* 5.	PAVED SHOULDER WIDTH (Feet)	[_4.]	[10.]
6.	SHOULDER BASE TYPE (CODES-TABLE A.6)	[21.]	[21.]
7.	SHOULDER SURFACE THICKNESS (Inches)	[11.0]	[11.0]
8.	SHOULDER BASE THICKNESS (Inches)	[_0.0]	[_0.0]
* 9.	SUBSURFACE DRAINAGE TYPE No Subsurface Drainage... 1 Longitudinal Drains... 2 Transverse Drains... 3 Drainage Blanket... 4 Well System... 5 Drainage Blanket with Longitudinal Drains... 6 Other (Specify)... 7 ________		[1.]
*10.	SUBSURFACE DRAINAGE LOCATION Continuous Along Test Section... 1 Intermittent... 2		[N.]
11.	DIAMETER OF LONGITUDINAL DRAINPIPES (Inches)		[_N._]
12.	SPACING OF LATERALS (Feet)		[_N_.]

PREPARER N. Henderson EMPLOYER NCE DATE 7-26-93

SPS-2 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [59]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[59]				
2	[03]	[04]	[11.0]	___._	___._	___._
3	[__ __]	[__ __]	[___._]	___._	___._	___._
4	[__ __]	[__ __]	[___._]	___._	___._	___._
5	[__ __]	[__ __]	[___._]	___._	___._	___._
6	[__ __]	[__ __]	[___._]	___._	___._	___._
7	[__ __]	[__ __]	[___._]	___._	___._	___._
8	[__ __]	[__ __]	[___._]	___._	___._	___._
9	[__ __]	[__ __]	[___._]	___._	___._	___._
10	[__ __]	[__ __]	[___._]	___._	___._	___._

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (Feet) (Rock, Stone, Dense Shale) [_ N . _]

NOTES:

1. Layer 1 is the subgrade soil, the highest numbered layer is the pavement surface.

2. Layer description codes:

Overlay.................01	Base Layer........05	Porous Friction Course..09
Seal/Tack Coat..........02	Subbase Layer.....06	Surface Treatment.......10
Original Surface........03	Subgrade..........07	Embankment (Fill).......11
HMAC Layer (Subsurface).04	Interlayer........08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990 (Appendix B of SPS-2 Data Collection Guide).

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER N. Henderson EMPLOYER NCE DATE 7-26-93

SPS-2 CONSTRUCTION DATA
SHEET 5
LAYER THICKNESS MEASUREMENTS

* STATE CODE [08]
* SPS PROJECT CODE [02]
* TEST SECTION NO. [59]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET ___ OF ___

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS (INCHES): DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	LEAN CONCRETE BASE	PCC SURFACE
0+00 222+00	0				12.0
	36				11.9
	72				12.0
	108				11.7
	144				11.7
0+50 222+50	0				11.7
	36				11.5
	72				11.8
	108				11.7
	144				11.8
1+00 223+00	0				11.6
	36				11.6
	72				11.8
	108				11.2
	144				11.8
1+50 223+50	0				12.1
	36				11.9
	72				12.0
	108				11.5
	144				12.0
2+00 224+00	0				11.8
	36				11.8
	72				12.1
	108				11.9
	144				12.0
2+50 224+50	0				11.7
	36				11.5
	72				11.7
	108				11.9
	144				12.0
3+00 225+00	0				11.4
	36				11.3
	72				11.4
	108				11.0
	144				11.4
LAYER NUMBER[1]					2

[1] from Construction Data Sheet 4

PREPARER N Henderson EMPLOYER NCE DATE 06-30-94

SPS-2 CONSTRUCTION DATA SHEET 5 LAYER THICKNESS MEASUREMENTS	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [59]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET ___ OF ___

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS (INCHES): DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	LEAN CONCRETE BASE	PCC SURFACE
3+50	0				11.7
225+50	36				11.6
	72				11.7
	108				11.6
	144				11.6
4+00	0				11.5
226+00	36				11.4
	72				11.4
	108				11.3
	144				11.5
4+50	0				12.3
226+50	36				12.2
	72				12.2
	108				12.2
	144				12.4
5+00	0				12.2
227+00	36				11.5
	72				11.7
	108				11.6
	144				11.6
__+__ __					
__+__ __					
__+__ __					
LAYER NUMBER[1]					2

[1] from Construction Data Sheet 4

PREPARER N Henderson EMPLOYER NCE DATE 06-30-94

February 1992

SPS-2 CONSTRUCTION DATA SHEET 6 SUBGRADE PREPARATION	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [59]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [07-20-93]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [07-25-93]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [3]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 ______

*4. GROSS WEIGHT (Tons) [_5.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[_]	[_N.__]
*6. STABILIZING AGENT 2	[_]	[__ __.__]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 ______

*7. TYPICAL LIFT THICKNESS (Inches) [14.0]
(For Fill Sections Only)

NOTE: Density Data is recorded on Sampling Data Sheet 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) ______

PREPARER N. Henderson EMPLOYER NCE DATE 7-26-93

SPS-2 CONSTRUCTION DATA SHEET 7 CUT-FILL SECTION LOCATIONS	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [59]

ORDER	*1 CUT-FILL[1]	REFERENCE PROJECT STATION NUMBER *2 START	*3 END	*4 TEST SECTION NUMBER [2]
1	1	0+00	5+00	080216
2	2	120+10	125+10	080259
3		+	+	
4		+	+	
5		+	+	
6		+	+	
7		+	+	
8		+	+	
9		+	+	
10		+	+	
11		+	+	
12		+	+	
13		+	+	
14		+	+	
15		+	+	
16		+	+	
17		+	+	
18		+	+	
19		+	+	
20		+	+	
21		+	+	
22		+	+	
23		+	+	
24		+	+	
25		+	+	

NOTES:

1. Indicate the type of subgrade section with one of the following:

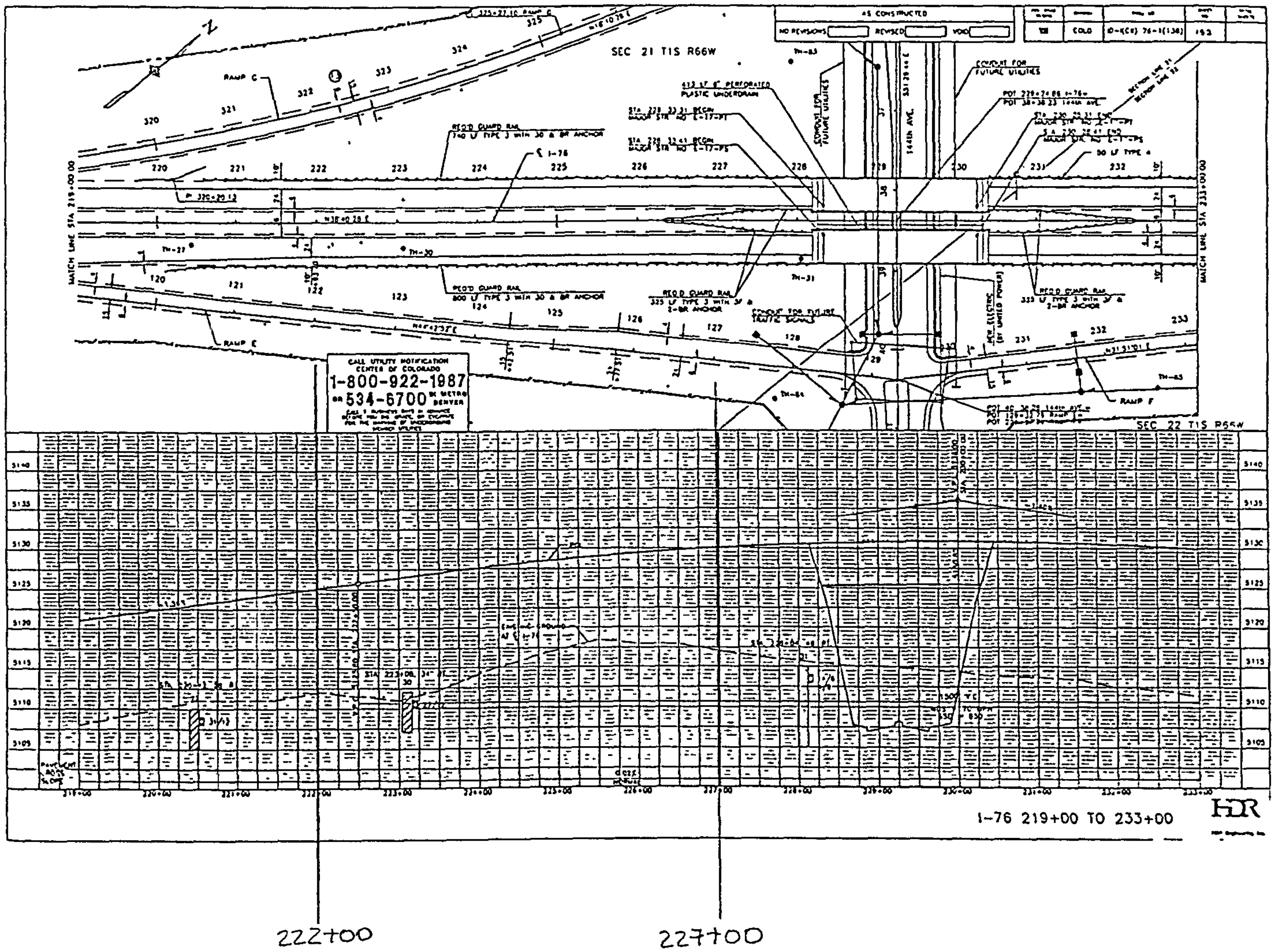
   Cut... 1 Fill... 2

2. A given Test Section No. will be repeated if both cut and fill sections exist within the test section.

PREPARER N. Henderson EMPLOYER NCE DATE 7-26-93

February 1992

SPS-2 CONSTRUCTION DATA SHEET 8 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [59]



PREPARER N. Henderson EMPLOYER NCE DATE ____________

SPS-2 CONSTRUCTION DATA SHEET 15 PORTLAND CEMENT CONCRETE LAYERS-JOINT DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [59]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [2]

* 2. AVERAGE CONTRACTION JOINT SPACING (Feet) [_ 15.0]

3. (RANDOM JOINT SPACING, IF ANY: ______________________________)

* 4. SKEWNESS OF JOINTS (ft/lane) [0.0]

* 5. TRANSVERSE CONTRACTION JOINT LOAD TRANSFER SYSTEM [1]
Round Dowels.......................... 1
Aggregate Interlock.................... 2
Other (Specify) ____________________ 3

* 6. ROUND DOWEL DIAMETER (Inches) [1.50]

* 7. DOWEL SPACING (Inches) [12.]

8. DISTANCE OF NEAREST DOWEL FROM OUTSIDE LANE-SHOULDER EDGE (Inches) [_ 6.0]

9. DOWEL LENGTH (Inches) [18.]

10. DOWEL COATING [1]
Paint and/or Grease.................... 1
Plastic................................ 2
Monel.................................. 3
Stainless Steel........................ 4
Epoxy.................................. 5
Other (Specify) ____________________ 6

11. METHOD USED TO INSTALL MECHANICAL LOAD TRANSFER DEVICES [1]
Preplaced on Baskets................... 1
Mechanically Installed................. 2
Other (Specify) ____________________ 3

12. DOWEL ALIGNMENT CHECKED BEFORE PLACEMENT (Y/N) [Y]

13. DOWEL ALIGNMENT CHECKED AFTER PLACEMENT (Y/N) [N]

If Yes, describe method used ______________________________
(e.g. Pachometer, Ground Penetrating Radar)

PREPARER N. Henderson EMPLOYER NCE DATE 7-26-93

February 1992

SPS-2 CONSTRUCTION DATA SHEET 16 PORTLAND CEMENT CONCRETE LAYERS-JOINT DATA CONT'D	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [59]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [2]

* 2. METHOD USED TO FORM TRANSVERSE JOINTS [1]
Sawed...................... 1 Metal Insert.........3
Plastic Insert............ 2
Other (Specify) ________________ 4

* 3. TYPE OF LONGITUDINAL JOINT (BETWEEN LANES) [2]
Butt...................... 1 Insert Weakened Plane..... 3
Sawed Weakened Plane...... 2
Other (Specify) ________________ 4

* 4. TYPE OF SHOULDER-TRAFFIC LANE JOINT [2]
Butt...................... 1 Insert Weakened Plane..... 3
Sawed Weakened Plane...... 2
Other (Specify) ________________ 4

*5. AVERAGE DEPTH OF SAWCUT, FROM MEASUREMENTS (Inches)............... [2.75]

*6. TIME INTERVAL BETWEEN CONCRETE PLACEMENT AND SAWCUT (HOURS)....... [_ _ 6.]

7. TRANSVERSE JOINT SEALANT TYPE (AS BUILT) [5]
Preformed (Open Web)...... 1 Rubberized Asphalt........ 3
Asphalt................... 2 Low-Modulus Silicone...... 4
Other (Specify) ________________ 5

TRANSVERSE JOINT SEALANT RESERVOIR (AS BUILT)

8. WIDTH, (Inches).. [_.38]

9. DEPTH, (Inches).. [2.75]

LONGITUDINAL JOINT SEALANT RESERVOIR (AS BUILT)

10. WIDTH, (Inches).. [_.38]

11. DEPTH, (Inches).. [2.75]

12. BETWEEN LANE TIE BAR DIAMETER (Inches) [_.625]

13. BETWEEN LANE TIE BAR LENGTH (Inches) [30.]

14. BETWEEN LANE TIE BAR SPACING (Inches) [30.0]

SHOULDER-TRAFFIC LANE JOINT SEALANT RESERVOIR (AS BUILT)

15. WIDTH, (Inches).. [_.38]

16. DEPTH, (Inches).. [2.75]

PREPARER N. Henderson EMPLOYER NCE DATE 7-26-93

SPS-2 CONSTRUCTION DATA SHEET 18 PORTLAND CEMENT CONCRETE LAYERS - MIXTURE DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [59]

*1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [2]

MIX DESIGN (OVEN DRIED WEIGHT - PER CUBIC YARD)

*2. Coarse Aggregate (Pounds)................................ [1770.]

*3. Fine Aggregate (Pounds)................................ [1210.]

*4. Cement (Pounds)................................ [_565.]

*5. Water (Pounds)................................ [_243.]

*6. TYPE CEMENT USED (See Cement Type Codes, Table A.11) [55]
(If Other, Specify Southwestern Type I/II Low Alkali)

*7. ALKALI CONTENT OF CEMENT, (PERCENT BY WEIGHT OF CEMENT) [__ __.59]

ADMIXTURES (PERCENT BY WEIGHT OF CEMENT)

		TYPE CODE	AMOUNT
*8.	ADMIXTURE #1	[10.0]	[113.0]
*9.	ADMIXTURE #2	[8.0]	[__ __5.6]
*10.	ADMIXTURE #3	[__.__] WRA	[__17.0]

(See Cement Admixture Codes, Table A.12)
(If Other, Specify ______________________)

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
11.	Coarse #57	[01]	[__37.1]
12.	Coarse #4	[01]	[__39.9]
13.	Coarse	[__ __]	[__ __ __.__]
14.	Coarse and Fine	[__ __]	[__ __ __.__]

PREPARER N. Henderson EMPLOYER NCE DATE 7-26-93

SPS-2 CONSTRUCTION DATA SHEET 19 PORTLAND CEMENT CONCRETE LAYERS MIXTURE DATA (CONTINUED)	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [59]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [2]

COMPOSITION OF COARSE AGGREGATE

	TYPE	PERCENT
* 2. #57	[1]	[_ 5 5.]
* 3. #4	[1]	[_ 4 5.]
* 4.	[_]	[_ _ _.]

Crushed Stone.... 1 Manufactured gravel...... 2 Crushed Gravel...... 3
Crushed Slag..... 4 Lightweight............. 5 Recycled Concrete... 6
Other (Specify)________________________ 7

* 5. GEOLOGIC CLASSIFICATION OF COARSE AGGREGATE [_ N.]
(SEE GEOLOGIC CLASSIFICATION CODES, TABLE A.9)

COMPOSITION OF FINE AGGREGATE

	TYPE	PERCENT
* 6.	[1]	[1 0 0.]
* 7.	[_]	[_ _ _.]
* 8.	[_]	[_ _ _.]

Natural Sand... 1
Crushed, Manufactured Sand (From Crushed Gravel or Stone)...2
Recycled Concrete... 3 Other (Specify)__________________________ 4

9. INSOLUBLE RESIDUE, PERCENT (ASTM D3042) [_ _ N.]

10. GRADATION OF COARSE AGGREGATE

Sieve Size	% Passing
2"........	1 0 0
1 1/2"....	_ 9 8
1"........	_ 8 0
7/8"......	_ _ _
3/4"......	_ 5 6
5/8"......	_ _ _
1/2"......	_ 3 1
3/8"......	_ 2 2
No. 4.....	_ _ 5

11. GRADATION OF FINE AGGREGATE

Sieve Size	% Passing
No. 8.....	_ 9 7
No. 10....	_ _ _
No. 16....	_ 7 8
No. 30....	_ 4 4
No. 40....	_ _ _
No. 50....	_ 1 7
No. 80....	_ _ _
No. 100...	_ _ 3
No. 200...	_ _ 0.6

BULK SPECIFIC GRAVITIES:

12. Coarse Aggregate (AASHTO T85 or ASTM C127) [N._ _ _]

13. Fine Aggregate (AASHTO T84 or ASTM C128) [N._ _ _]

PREPARER N. Henderson EMPLOYER NCE DATE 7-26-93

SPS-2 CONSTRUCTION DATA SHEET 20 PORTLAND CEMENT CONCRETE LAYERS PLACEMENT DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [59]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [07-26-93]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [07-26-93]

*3. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [2]

*4. CONCRETE MIX PLANT AND HAUL

	Name	Haul Distance (Mi)	Time (Min)
Plant 1	Castle Rock	[_ _ 1]	[_ 1 5]
Plant 2	______	[_ _ _]	[_ _ _]
Plant 3	______	[_ _ _]	[_ _ _]

*5. PAVER TYPE [1]
Slip Form Paver.... 1 Side Form... 2
Other (Specify) ______ 3

6. PAVER MANUFACTURER AND MODEL NUMBER Caterpillar SF550

7. SPREADER TYPE (if applicable) ______

8. SPREADER MANUFACTURER AND MODEL NUMBER Gomaco PS60

______

9. WIDTH PAVED IN ONE PASS (Feet) [38.0]

10. DOWEL PLACEMENT METHOD [2]
Dowel Bar Inserter (DBI)..... 1 Dowel Basket..... 2

11. NUMBER OF VIBRATORS [26]

12. VIBRATOR SPACING (Inches) [18]

13. DEPTH OF VIBRATORS BELOW SURFACE (Inches) [_ 6.0]

14. ADDITIONAL VIBRATION APPLIED ______

______

______

______

PREPARER N. Henderson EMPLOYER NCE DATE 7-26-93

SPS-2 CONSTRUCTION DATA SHEET 21 PORTLAND CEMENT CONCRETE LAYERS PLACEMENT DATA (CONTINUED)	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [59]

1. CONSOLIDATION OF MATERIALS [1]
   Internal Vibrators... 1 Vibrating Screeds... 2 Troweling... 3
   Rolling... 4 Tamping... 5
   Other (Specify)... 6 ______

2. FINISHING [4]
   Screeding... 1 Hand-Troweling... 2 Machine-Troweling... 3
   Other (Specify)... 4 1,2,3

3. CURING [1]

Membrane Curing Compound......	1	Burlap-Polyethylene Blanket...	5
Burlap Curing Blankets........	2	Cotton Mat Curing.............	6
Waterproof Paper Blankets.....	3	Hay...........................	7
White Polyethylene Sheeting...	4		
Other (Specify) ______			8

4. TEXTURING [7]

Tine..........................	1	Grooved Float.................	4
Broom.........................	2	Astro Turf....................	5
Burlap Drag...................	3	None..........................	6
Other (Specify) 1,3,5			7

PREPARER N. Henderson EMPLOYER NCE DATE 7-26-93

SPS-2 CONSTRUCTION DATA SHEET 22 PORTLAND CEMENT CONCRETE SURFACE LAYER PROFILE DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [59]

1. DATE PROFILE MEASURED (Month-Day-Year) [02-22-93]

2. PROFILOGRAPH TYPE California... 1 Rainhart... 2 [1]

3. PROFILE INDEX (Inches/Mile). [3.7]

4. INTERPRETATION METHOD Manual.. 1 Mechanical.. 2 Computer.. 3 [1]

5. HEIGHT OF BLANKING BAND (Inches) [0.20]

6. CUTOFF HEIGHT (Inches) [__.__ __]

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) [Y]

8. WAS SURFACE PROFILE CORRECTED BY DIAMOND GRINDING? (YES, NO) [N]

IF YES COMPLETE THE FOLLOWING:

9. DATE DIAMOND GRINDING OPERATIONS BEGAN (Month-Day-Year) [__ __-__ __-__ __]

10. DATE DIAMOND GRINDING OPERATIONS COMPLETED (Month-Day-Year) [__ __-__ __-__ __]

*11. REASON FOR GRINDING [__]
Elimination of Faulting... 1 Elimination of Slab Warping... 2
Improve Skid Resistance... 3
Restoration of Transverse Drainage Slope... 4
Correction of Construction Deficiencies...5
Other (Specify)... 6 ____________

12. AVERAGE DEPTH OF CUT (Inches) [__.__ __]

13. CUTTING HEAD WIDTH (Inches) [__ __ __.__ __]

14. AVERAGE GROOVE WIDTH (Inches) [__.__]

15. AVERAGE SPACING BETWEEN BLADES (Inches) [__.__]

PREPARER [signature] EMPLOYER CDOT DATE 5/25/94

SPS-2 CONSTRUCTION DATA SHEET 27 MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [59]

Provide any miscellaneous comments and notes concerning construction operations which may have an influence on the ultimate performance of the test sections or which may cause undesired performance differences to occur between test sections. Also include any quality control measurements or data for which space is not provided on other forms. Provide an indication of the basis for such measurements, such as an ASTM, AASHTO, or Agency standard test designation.

PREPARER N. Henderson EMPLOYER NCE DATE 7-26-93

APPENDIX A

SAMPLING DATA SHEETS, FIELD OPERATIONS INFORMATION FORMS AND SPS-2 CONSTRUCTION DATA SHEETS

(Exclusively for SPS Experiments)

080216

SPS-2 CONSTRUCTION DATA SHEET 1 PROJECT IDENTIFICATION	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [16]

*1.	DATE OF DATA COLLECTION OR UPDATE (Month/Year)	[10/93]
*2.	STATE HIGHWAY AGENCY (SHA) DISTRICT NUMBER	[06.]
*3.	COUNTY OR PARISH	[__ __/__.]
4.	FUNCTIONAL CLASS (SEE TABLE A.2, APPENDIX B)	[__ 1.]
*5.	ROUTE SIGNING (NUMERIC CODE) Interstate... 1 U.S.... 2 State... 3 Other... 4	[1.]
*6.	ROUTE NUMBER	[__ __ __ 76.]
7.	TYPE OF PAVEMENT (See Codes Below)	[17.]
8.	NUMBER OF THROUGH LANES (ONE DIRECTION)	[2.]
*9.	DATE OF CONSTRUCTION COMPLETION (Month/Year)	[10/93]
*10.	DATE OPENED TO TRAFFIC (Month/Year)	[__ __/93]
11.	CONSTRUCTION COSTS PER LANE MILE (In $1000)	[__ __ __ __ __.]
12.	DIRECTION OF TRAVEL East Bound... 1 West Bound... 2 North Bound... 3 South Bound... 4	[1.]
	PROJECT STARTING POINT LOCATION	
*13.	MILEPOINT	[__ 18.46]
*14.	ELEVATION	[__ 5077]
*15.	LATITUDE	[__ __° __ __' __ __ . __ __"]
*16.	LONGITUDE	[N41°25'25.3E"]

17. ADDITIONAL LOCATION INFORMATION (SIGNIFICANT LANDMARKS): [Buckley Rd Overpass located approximately 3500 feet east of section.]

18. HPMS SAMPLE NUMBER (HPMS ITEM 28) ? [__ __ __ __ __ __ __ __ __ __ __ __]

19. HPMS SECTION SUBDIVISION (HPMS ITEM 29) ? [__.]

VALID PAVEMENT TYPE CODES FOR SPS-2, SPS-2A, and SPS-2B

JPCP on unbound base	17
JRCP on unbound base	18
JPCP on Bituminous base	20
JRCP on Bituminous base	21
JPCP on Lean Concrete Base	23
JRCP on Lean Concrete Base	24

PREPARER N. Henderson EMPLOYER NCE DATE 10-12-93

SPS-2 CONSTRUCTION DATA SHEET 2 GEOMETRIC, SHOULDER AND DRAINAGE INFORMATION	* STATE CODE [0 8] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [1 6]

* 1. LANE WIDTH (Feet) [1 4.]

2. MONITORING SITE LANE NUMBER [1.]
(LANE 1 IS OUTSIDE LANE, NEXT TO SHOULDER
LANE 2 IS NEXT TO LANE 1, ETC.)

SHOULDER DATA	INSIDE SHOULDER	OUTSIDE SHOULDER
* 3. SHOULDER SURFACE TYPE Turf... 1 Granular.... 2 Asphalt Concrete... 3 Concrete... 4 Surface Treatment... 5 Other (Specify)... 6 ______	[4.]	[4.]
* 4. TOTAL SHOULDER WIDTH (Feet)	[_ 4.]	[_ 8.]
* 5. PAVED SHOULDER WIDTH (Feet)	[_ 4.]	[_ 8.]
6. SHOULDER BASE TYPE (CODES-TABLE A.6)	[2 6.]	[2 6.]
7. SHOULDER SURFACE THICKNESS (Inches)	[1 1. 0]	[1 1. 0]
8. SHOULDER BASE THICKNESS (Inches)	[_ 6. 0]	[_ 6. 0]

* 9. SUBSURFACE DRAINAGE TYPE [1.]
No Subsurface Drainage... 1 Longitudinal Drains... 2
Transverse Drains... 3 Drainage Blanket... 4 Well System... 5
Drainage Blanket with Longitudinal Drains... 6
Other (Specify)... 7 ______

*10. SUBSURFACE DRAINAGE LOCATION [N.]
Continuous Along Test Section... 1 Intermittent... 2

11. DIAMETER OF LONGITUDINAL DRAINPIPES (Inches) [_ N._]

12. SPACING OF LATERALS (Feet) [_ N _.]

PREPARER N. Henderson EMPLOYER NCE DATE 10-12-93

SPS-2 CONSTRUCTION DATA SHEET 4 LAYER DESCRIPTIONS	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [16]

*1 LAYER NUMBER	*2 LAYER DESCRIPTION	*3 MATERIAL TYPE CLASS	*4 LAYER THICKNESSES (Inches)			
			AVERAGE	MINIMUM	MAXIMUM	STD. DEV.
1	SUBGRADE(7)	[58]				
2	[05]	[26]	[_ 6.0]	_ _ _._	_ _ _._	_ _ _._
3	[03]	[04]	[_ 11.0]	_ _ _._	_ _ _._	_ _ _._
4	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
5	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
6	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
7	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
8	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
9	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._
10	[_ _]	[_ _]	[_ _ _._]	_ _ _._	_ _ _._	_ _ _._

*5 DEPTH BELOW SURFACE TO "RIGID" LAYER (Feet) [_ N . _]
(Rock, Stone, Dense Shale)

NOTES:

1. Layer 1 is the subgrade soil, the highest numbered layer is the pavement surface.

2. Layer description codes:

Overlay.................01	Base Layer........05	Porous Friction Course..09
Seal/Tack Coat..........02	Subbase Layer.....06	Surface Treatment.......10
Original Surface........03	Subgrade..........07	Embankment (Fill).......11
HMAC Layer (Subsurface).04	Interlayer........08	

3. The material type classification codes are presented in Tables A.5, A.6, A.7 and A.8 of the Data Collection Guide for Long Term Pavement Performance Studies, dated January 17, 1990 (Appendix B of SPS-2 Data Collection Guide).

4. Enter the average thickness of each layer and the minimum, maximum and standard deviation of the thickness measurements, if known.

PREPARER N Henderson EMPLOYER NCE DATE 10-12-93

SPS-2 CONSTRUCTION DATA
SHEET 5
LAYER THICKNESS MEASUREMENTS

* STATE CODE [08]
* SPS PROJECT CODE [02]
* TEST SECTION NO. [16]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET ____ OF ____

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS (INCHES): DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	LEAN CONCRETE BASE	PCC SURFACE
0+00 (101+90)	0	6.2			11.4
	60	5.8			11.7
	96	6.2			11.6
	132	6.0			11.7
	168	6.1			11.6
0+50 (102+40)	0	5.8			11.7
	60	5.6			11.8
	96	5.7			11.8
	132	6.1			11.7
	168	5.9			11.6
1+00 (102+90)	0	5.8			11.4
	60	5.2			11.7
	96	5.6			11.6
	132	5.5			11.7
	168	5.7			11.5
1+50 (103+40)	0	5.9			11.4
	60	5.4			11.7
	96	5.7			11.6
	132	5.9			11.7
	168	5.7			11.8
2+00 (103+90)	0	5.7			11.7
	60	5.3			11.8
	96	5.4			12.0
	132	5.7			11.9
	168	5.7			11.7
2+50 (104+40)	0	6.1			11.2
	60	5.8			11.4
	96	5.6			11.4
	132	6.1			11.4
	168	5.6			11.4
3+00 (104+90)	0	6.0			11.5
	60	5.4			11.6
	96	5.8			11.6
	132	6.2			11.4
	168	6.0			11.5
LAYER NUMBER[1]		2			3

[1] from Construction Data Sheet 4

PREPARER N. Henderson EMPLOYER NCE DATE 06-30-94

SPS-2 CONSTRUCTION DATA
SHEET 5
LAYER THICKNESS MEASUREMENTS

* STATE CODE [08]
* SPS PROJECT CODE [02]
* TEST SECTION NO. [16]

LAYER THICKNESS MEASUREMENTS (Inches)

SHEET ____ OF ____

STATION NUMBER	OFFSET (Inches)	LAYER THICKNESS (INCHES): DENSE GRADED AGGREGATE BASE	PERMEABLE ASPHALT TREATED BASE	LEAN CONCRETE BASE	PCC SURFACE
3+50	0	6.0			11.5
	60	5.5			11.6
	96	5.9			11.4
105+40	132	6.0			11.3
	168	5.9			11.4
4+00	0	6.3			11.8
	60	6.5			12.2
	96	6.4			11.7
105+90	132	6.7			11.9
	168	7.1			12.3
4+50	0	6.4			11.7
	60	6.5			11.6
	96	6.9			11.4
106+40	132	6.9			11.4
	169	6.1			11.7
5+00	0				
106+90	60				
	96				
	132				
*	168				
__+__					
__+__					
__+__					
LAYER NUMBER[1]		2			3

*Control points lost

[1] from Construction Data Sheet 4

PREPARER N. Henderson EMPLOYER NCE DATE 06-30-94

SPS-2 CONSTRUCTION DATA SHEET 6 SUBGRADE PREPARATION	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [10]

*1. SUBGRADE PREPARATION BEGAN (Month-Day-Year) [09-29-93]

*2. SUBGRADE PREPARATION COMPLETED (Month-Day-Year) [10-06-93]

PRIMARY COMPACTION EQUIPMENT

*3. CODE TYPE [4]

COMPACTION EQUIPMENT TYPE CODES
Sheepsfoot... 1 Pneumatic Tired... 2 Steel Wheel Tandem... 3
Single Drum Vibr.... 4 Double Drum Vibr.... 5
Other (Specify)... 6 ______

*4. GROSS WEIGHT (Tons) [_4.0]

	TYPE	PERCENT
*5. STABILIZING AGENT 1	[5]	[_ _._]
*6. STABILIZING AGENT 2	[_]	[_ _._]

STABILIZING AGENT TYPE CODES
Portland Cement... 1 Lime... 2 Fly Ash, Class C... 3
Fly Ash, Class N... 4
Other (Specify)... 5 ______

*7. TYPICAL LIFT THICKNESS (Inches) [41.0]
(For Fill Sections Only)

NOTE: Density Data is recorded on Sampling Data Sheet 8-1

8. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) ______

PREPARER N. Henderson EMPLOYER NCE DATE 10-06-93

SPS-2 CONSTRUCTION DATA SHEET 7 CUT-FILL SECTION LOCATIONS	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [16]

ORDER	*1 CUT-FILL[1]	REFERENCE PROJECT STATION NUMBER *2 START	REFERENCE PROJECT STATION NUMBER *3 END	*4 TEST SECTION NUMBER [2]
1	2	0 + 00	5 + 00	090216
2		+	+	
3		+	+	
4		+	+	
5		+	+	
6		+	+	
7		+	+	
8		+	+	
9		+	+	
10		+	+	
11		+	+	
12		+	+	
13		+	+	
14		+	+	
15		+	+	
16		+	+	
17		+	+	
18		+	+	
19		+	+	
20		+	+	
21		+	+	
22		+	+	
23		+	+	
24		+	+	
25		+	+	

NOTES:

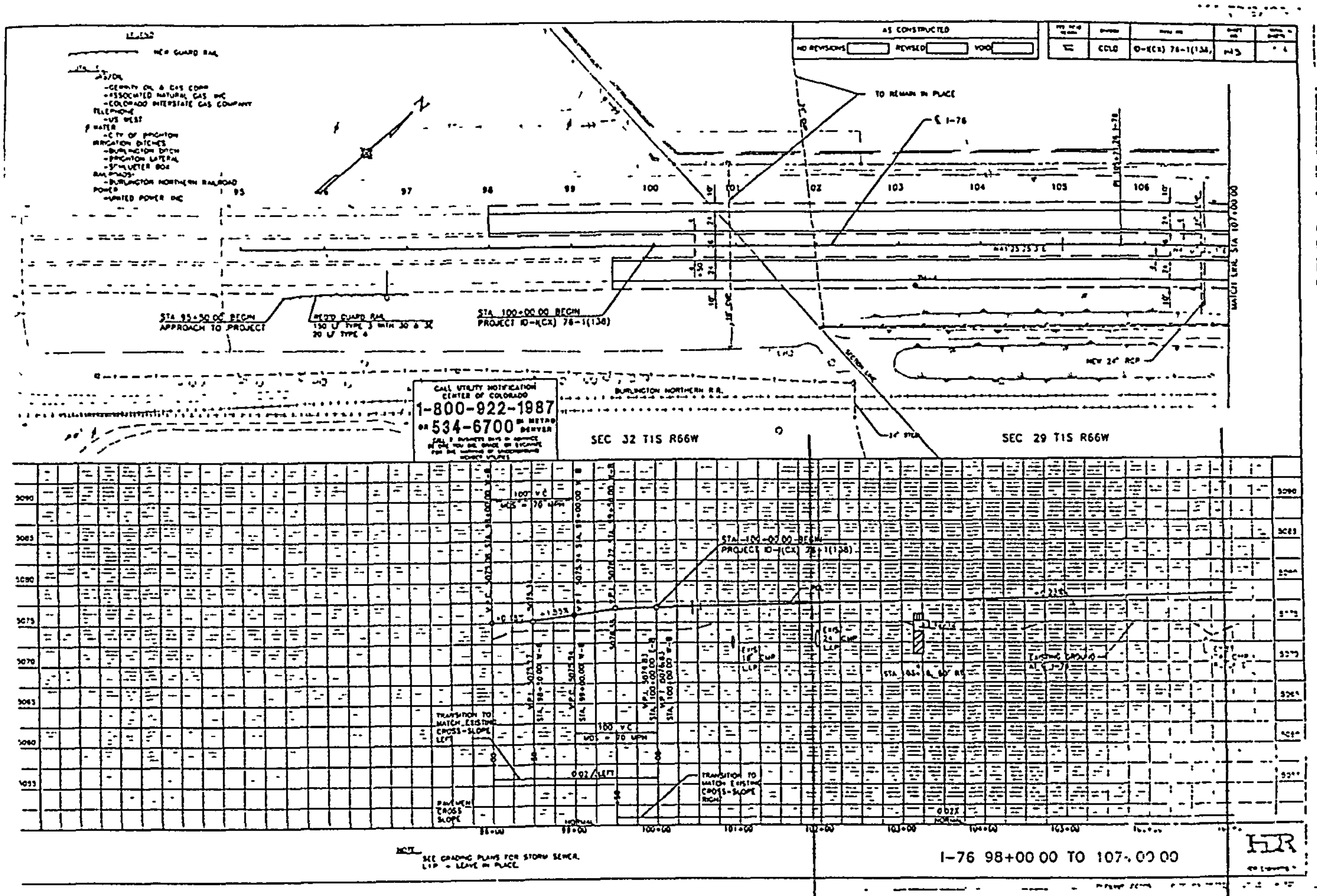
1. Indicate the type of subgrade section with one of the following:

   Cut... 1 Fill... 2

2. A given Test Section No. will be repeated if both cut and fill sections exist within the test section.

PREPARER N. Henderson EMPLOYER NCE DATE 10-17-94

SPS-2 CONSTRUCTION DATA SHEET 8 SUBGRADE EXCAVATION AND BACKFILLING SKETCH	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [10]



101+90

PREPARER N. Henderson EMPLOYER NCE DATE ________

SPS-2 CONSTRUCTION DATA SHEET 9 UNBOUND AGGREGATE BASE MATERIAL PLACEMENT	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [16]

*1. UNBOUND BASE MATERIAL PLACEMENT BEGAN (Month-Day-Year) [10-06-93]

*2. UNBOUND BASE MATERIAL PLACEMENT COMPLETED (Month-Day-Year) [10-07-93]

*3. LAYER NUMBER (From Sheet 4) [2]

PRIMARY COMPACTION EQUIPMENT

*4. CODE TYPE [3]

COMPACTION TYPE CODES
Pneumatic - Tired... 1 Steel Wheel Tandem... 2 Single Drum Vibr.... 3
Double Drum Vibr.... 4
Other (Specify)... 5 ______

*5. GROSS WEIGHT (Tons) [_ 4.0]

*6. LIFT THICKNESSES

Nominal First Lift Placement Thickness (Inches) [_ 6.0]

Nominal Second Lift Placement Thickness (Inches) [_ _._]

Nominal Third Lift Placement Thickness (Inches) [_ _._]

Nominal Fourth Lift Placement Thickness (Inches) [_ _._]

NOTE: Density Data is recorded on Sampling Data Sheet 8-1

7. SIGNIFICANT EVENTS DURING CONSTRUCTION (DISRUPTIONS, RAIN, EQUIPMENT PROBLEMS, ETC.) Rain (0.2 in) on 10-7-93 in p.m.

PREPARER N. Henderson EMPLOYER NCE DATE 10-08-93

SPS-2 CONSTRUCTION DATA SHEET 15 PORTLAND CEMENT CONCRETE LAYERS-JOINT DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [16]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

* 2. AVERAGE CONTRACTION JOINT SPACING (Feet) [_ 15.0]

3. (RANDOM JOINT SPACING, IF ANY: ______________________________)

* 4. SKEWNESS OF JOINTS (ft/lane) [0.0]

* 5. TRANSVERSE CONTRACTION JOINT LOAD TRANSFER SYSTEM [1]
   - Round Dowels.......................... 1
   - Aggregate Interlock.................... 2
   - Other (Specify) ______________________ 3

* 6. ROUND DOWEL DIAMETER (Inches) [1.50]

* 7. DOWEL SPACING (Inches) [12]

8. DISTANCE OF NEAREST DOWEL FROM OUTSIDE LANE-SHOULDER EDGE (Inches) [_ 6.0]

9. DOWEL LENGTH (Inches) [18.]

10. DOWEL COATING [1]
    - Paint and/or Grease.................... 1
    - Plastic................................ 2
    - Monel.................................. 3
    - Stainless Steel........................ 4
    - Epoxy.................................. 5
    - Other (Specify) ______________________ 6

11. METHOD USED TO INSTALL MECHANICAL LOAD TRANSFER DEVICES [1]
    - Preplaced on Baskets................... 1
    - Mechanically Installed................. 2
    - Other (Specify) ______________________ 3

12. DOWEL ALIGNMENT CHECKED BEFORE PLACEMENT (Y/N) [Y]

13. DOWEL ALIGNMENT CHECKED AFTER PLACEMENT (Y/N) [N]

    If Yes, describe method used ______________________________
    (e.g. Pachometer, Ground Penetrating Radar)

PREPARER N. Henderson EMPLOYER NCE DATE 10-11-93

SPS-2 CONSTRUCTION DATA SHEET 16 PORTLAND CEMENT CONCRETE LAYERS-JOINT DATA CONT'D	* STATE CODE [0 8] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [1 6]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

* 2. METHOD USED TO FORM TRANSVERSE JOINTS [1]
   Sawed...................... 1 Metal Insert.........3
   Plastic Insert............ 2
   Other (Specify) ______________________ 4

* 3. TYPE OF LONGITUDINAL JOINT (BETWEEN LANES) [2]
   Butt...................... 1 Insert Weakened Plane..... 3
   Sawed Weakened Plane...... 2
   Other (Specify) ______________________ 4

* 4. TYPE OF SHOULDER-TRAFFIC LANE JOINT [2]
   Butt...................... 1 Insert Weakened Plane..... 3
   Sawed Weakened Plane...... 2
   Other (Specify) ______________________ 4

*5. AVERAGE DEPTH OF SAWCUT, FROM MEASUREMENTS (Inches)............... [2.75]

*6. TIME INTERVAL BETWEEN CONCRETE PLACEMENT AND SAWCUT (HOURS)....... [_ _ 6.]

7. TRANSVERSE JOINT SEALANT TYPE (AS BUILT) [5]
   Preformed (Open Web)...... 1 Rubberized Asphalt........ 3
   Asphalt................... 2 Low-Modulus Silicone...... 4
   Other (Specify) ______________________ 5

TRANSVERSE JOINT SEALANT RESERVOIR (AS BUILT)

8. WIDTH, (Inches).. [_.39]

9. DEPTH, (Inches).. [2.70]

LONGITUDINAL JOINT SEALANT RESERVOIR (AS BUILT)

10. WIDTH, (Inches).. [0.38]

11. DEPTH, (Inches).. [2.70]

12. BETWEEN LANE TIE BAR DIAMETER (Inches) [_.625]

13. BETWEEN LANE TIE BAR LENGTH (Inches) [30.]

14. BETWEEN LANE TIE BAR SPACING (Inches) [30.0]

SHOULDER-TRAFFIC LANE JOINT SEALANT RESERVOIR (AS BUILT)

15. WIDTH, (Inches).. [0.39]

16. DEPTH, (Inches).. [2.70]

PREPARER N. Henderson EMPLOYER NCE DATE 10-12-93

SPS-2 CONSTRUCTION DATA SHEET 18 PORTLAND CEMENT CONCRETE LAYERS - MIXTURE DATA	* STATE CODE [0 8] * SPS PROJECT CODE [0 2] * TEST SECTION NO. [1 6]

*1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

MIX DESIGN (OVEN DRIED WEIGHT - PER CUBIC YARD)

*2. Coarse Aggregate (Pounds).................................... [1 8 6 5.]

*3. Fine Aggregate (Pounds)...................................... [_ 9 3 5.]

*4. Cement (Pounds).. [_ 7 4 9.]

*5. Water (Pounds)... [_ 2 5 7.]

*6. TYPE CEMENT USED (See Cement Type Codes, Table A.11) [5 5]
(If Other, Specify Southwestern Type I/II Low Alkali)

*7. ALKALI CONTENT OF CEMENT, (PERCENT BY WEIGHT OF CEMENT) [_ _.59]

ADMIXTURES (PERCENT BY WEIGHT OF CEMENT)

		TYPE CODE	AMOUNT
*8.	ADMIXTURE #1	[10.0]	[_ 2 0.0]
*9.	ADMIXTURE #2	[8.0]	[_ _ _._] .025
*10.	ADMIXTURE #3	[_._] ? WRA	[_ _ 0.3]

(See Cement Admixture Codes, Table A.12)
(If Other, Specify ____________________)

AGGREGATE DURABILITY TEST RESULTS
(SEE DURABILITY TEST TYPE CODES, TABLE A.13)

	TYPE OF AGGREGATE	TYPE OF TEST	RESULTS
11.	Coarse	[0 1]	[_ 3 2.0]
12.	Coarse	[_ _]	[_ _ _._]
13.	Coarse	[_ _]	[_ _ _._]
14.	Coarse and Fine	[_ _]	[_ _ _._]

PREPARER N. Henderson EMPLOYER NCE DATE 10-12-93

SPS-2 CONSTRUCTION DATA SHEET 19 PORTLAND CEMENT CONCRETE LAYERS MIXTURE DATA (CONTINUED)	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [16]

* 1. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

COMPOSITION OF COARSE AGGREGATE

	TYPE	PERCENT
* 2.	[1]	[100.]
* 3.	[_]	[_ _ _.]
* 4.	[_]	[_ _ _.]

Crushed Stone.... 1 Manufactured gravel...... 2 Crushed Gravel...... 3
Crushed Slag..... 4 Lightweight............. 5 Recycled Concrete... 6
Other (Specify)________________ 7

* 5. GEOLOGIC CLASSIFICATION OF COARSE AGGREGATE (SEE GEOLOGIC CLASSIFICATION CODES, TABLE A.9) [_ N.]

COMPOSITION OF FINE AGGREGATE

	TYPE	PERCENT
* 6.	[1]	[100.]
* 7.	[_]	[_ _ _.]
* 8.	[_]	[_ _ _.]

Natural Sand... 1
Crushed, Manufactured Sand (From Crushed Gravel or Stone)...2
Recycled Concrete... 3 Other (Specify)________________ 4

9. INSOLUBLE RESIDUE, PERCENT (ASTM D3042) [_ _ N.]

10. GRADATION OF COARSE AGGREGATE

Sieve Size	% Passing
2"........	___
1 1/2"....	100
1"........	99
7/8"......	___
3/4"......	87
5/8"......	___
1/2"......	55
3/8"......	39
No. 4.....	8

11. GRADATION OF FINE AGGREGATE

Sieve Size	% Passing
No. 8.....	97
No. 10....	___
No. 16....	78
No. 30....	44
No. 40....	___
No. 50....	17
No. 80....	___
No. 100...	3
No. 200...	0.6

BULK SPECIFIC GRAVITIES:

12. Coarse Aggregate (AASHTO T85 or ASTM C127) [2.730]

13. Fine Aggregate (AASHTO T84 or ASTM C128) [2.600]

PREPARER N. Henderson EMPLOYER NCE DATE 10-12-93

SPS-2 CONSTRUCTION DATA SHEET 20 PORTLAND CEMENT CONCRETE LAYERS PLACEMENT DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [16]

*1. DATE PAVING OPERATIONS BEGAN (Month-Day-Year) [10-11-93]

*2. DATE PAVING OPERATIONS COMPLETED (Month-Day-Year) [10-11-93]

*3. LAYER NUMBER (FROM CONSTRUCTION DATA SHEET 4) [3]

*4. CONCRETE MIX PLANT AND HAUL

	Name	Haul Distance (Mi)	Time (Min)
Plant 1	CastleRock	[_ _ 9]	[_ 30]
Plant 2	________	[_ _ _]	[_ _ _]
Plant 3	________	[_ _ _]	[_ _ _]

*5. PAVER TYPE [1]
Slip Form Paver.... 1 Side Form... 2
Other (Specify) ____________ 3

6. PAVER MANUFACTURER AND MODEL NUMBER CAT SF-550

7. SPREADER TYPE (if applicable) ____________

8. SPREADER MANUFACTURER AND MODEL NUMBER GOMACO PS-100

9. WIDTH PAVED IN ONE PASS (Feet) [38.0]

10. DOWEL PLACEMENT METHOD [2]
Dowel Bar Inserter (DBI)..... 1 Dowel Basket..... 2

11. NUMBER OF VIBRATORS [28]

12. VIBRATOR SPACING (Inches) [18]

13. DEPTH OF VIBRATORS BELOW SURFACE (Inches) [_ 6.0]

14. ADDITIONAL VIBRATION APPLIED ____________

PREPARER N Henderson EMPLOYER NCE DATE 10-11-93

SPS-2 CONSTRUCTION DATA SHEET 21 PORTLAND CEMENT CONCRETE LAYERS PLACEMENT DATA (CONTINUED)	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [16]

1. CONSOLIDATION OF MATERIALS [1]
   Internal Vibrators... 1   Vibrating Screeds... 2   Troweling... 3
   Rolling... 4   Tamping... 5
   Other (Specify)... 6 ____

2. FINISHING [4]
   Screeding... 1   Hand-Troweling... 2   Machine-Troweling... 3
   Other (Specify)... 4 1, 2, 3

3. CURING [1]

Membrane Curing Compound......	1	Burlap-Polyethylene Blanket...	5
Burlap Curing Blankets........	2	Cotton Mat Curing............	6
Waterproof Paper Blankets.....	3	Hay..........................	7
White Polyethylene Sheeting...	4		
Other (Specify) ____			8

4. TEXTURING [7]

Tine.........................	1	Grooved Float................	4
Broom........................	2	Astro Turf...................	5
Burlap Drag..................	3	None.........................	6
Other (Specify) 1, 3, 5			7

PREPARER N. Henderson   EMPLOYER NCE   DATE 10-11-93

SPS-2 CONSTRUCTION DATA SHEET 22 PORTLAND CEMENT CONCRETE SURFACE LAYER PROFILE DATA	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [16]

10·

1. DATE PROFILE MEASURED (Month-Day-Year) [10 - 12 - 93]

2. PROFILOGRAPH TYPE California... 1 Rainhart... 2 [1]

3. PROFILE INDEX (Inches/Mile). [0]

4. INTERPRETATION METHOD Manual.. 1 Mechanical.. 2 Computer.. 3 [1]

5. HEIGHT OF BLANKING BAND (Inches) [0.20]

6. CUTOFF HEIGHT (Inches) [__.__ __]

7. SURFACE PROFILE USED AS BASIS OF INCENTIVE PAYMENT? (YES, NO) [Y]

8. WAS SURFACE PROFILE CORRECTED BY DIAMOND GRINDING? (YES, NO) [N]

IF YES COMPLETE THE FOLLOWING:

9. DATE DIAMOND GRINDING OPERATIONS BEGAN (Month-Day-Year) [__ __-__ __-__ __]

10. DATE DIAMOND GRINDING OPERATIONS COMPLETED (Month-Day-Year) [__ __-__ __-__ __]

*11. REASON FOR GRINDING [__]
Elimination of Faulting... 1 Elimination of Slab Warping... 2
Improve Skid Resistance... 3
Restoration of Transverse Drainage Slope... 4
Correction of Construction Deficiencies...5
Other (Specify)... 6 ________________

12. AVERAGE DEPTH OF CUT (Inches) [__ .__ __]

13. CUTTING HEAD WIDTH (Inches) [__ __ __ .__ __]

14. AVERAGE GROOVE WIDTH (Inches) [__ .__]

15. AVERAGE SPACING BETWEEN BLADES (Inches) [__.__]

PREPARER [signature] EMPLOYER CDOT DATE 5/23/94

SPS-2 CONSTRUCTION DATA SHEET 27 MISCELLANEOUS CONSTRUCTION NOTES AND COMMENTS	* STATE CODE [08] * SPS PROJECT CODE [02] * TEST SECTION NO. [_6]

Provide any miscellaneous comments and notes concerning construction operations which may have an influence on the ultimate performance of the test sections or which may cause undesired performance differences to occur between test sections. Also include any quality control measurements or data for which space is not provided on other forms. Provide an indication of the basis for such measurements, such as an ASTM, AASHTO, or Agency standard test designation.

PREPARER N. Henderson EMPLOYER NCE DATE 10-11-93